WHAT INFORMS OUR VISUAL TASTE?
THE IMPACT OF PERSONALITY AND POLITICAL ORIENTATION ON VISUAL PREFERENCES

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A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Mass Communication program in the Hussman School of Journalism and Media.

Chapel Hill
2020

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ABSTRACT

Shannon Zenner: What Informs Our Visual Taste? The Impact of Personality and Political Orientation on Visual Preferences
(Under the direction of Francesca Dillman Carpentier)

A survey of 976 participants was conducted to explore relationships between visual aesthetic preferences, personality traits, and political orientation. Two key visual aesthetic dimensions were used to evaluate visual aesthetic dimensions. The first dimension was the level of abstraction versus representativeness of a visual, the latter pole describing visuals that are clearly intended to reference a real object because the depicted object is easily recognizable, if not realistic. The second dimension was the level of curved versus angular visuals. Previous research has investigated these dimensions primarily with fine art materials. However, none of these studies have looked at these dimensions with graphic design materials. Therefore, this study adds to the existing literature by extending the measure of visual aesthetic preferences to graphic design domains, with the ultimate goal being to inform graphic design engaged in political and other advertising projects. Results of the survey indicate clear preferences for representative images over more abstract images and curved shapes over more angular shapes. Most importantly, these preferences were the same for traditional visual measures, such as fine art and shapes, as it was for the graphic design visuals used, logos and typography. Additional results support the idea that personality, political orientation, and visual preferences are related.

To my husband, Greg, for his unwavering love and support that made this impossible dream possible. You are a rock star.

To Francesca, the best advisor anyone could ever hope for. You were there for me when I had totally given up on myself and I will never forget that. Thank you for everything.

To the amazing members of my committee, thank you for each insight and comment, for your patience, and for giving of your time to support me.

To Rhonda Gibson, who always had my back. Thanks for being my fairy godmother during my time at UNC.

To Heidi, Ann and all the other faculty and staff at UNC who exemplify professionalism and what it means to be really decent human beings.

To Eleanor, thanks for being the chillest kid ever, and for putting up with an absentee mom during this entire process.

And finally, thank you to coffee shops everywhere. Seriously. Thank you.

ACKNOWLEDGEMENTS

I'd like to offer a special acknowledgement to Dr. Francesca Dillman Carpentier, the W. Horace Carter Distinguished Professor in the Hussman School of Journalism and Media at the University of North Carolina at Chapel Hill. Not only was Dr. Dillman Carpentier an amazing advisor and supporter of my research, but her generous contributions made this project possible. Thanks for all you do to support all graduate students and their research, emotionally, educationally and financially.

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CHAPTER 1

INTRODUCTION

The arts have been studied since the ancient Greeks, with Plato even devoting an entire book, the *Aesthetics*, to the understanding of beauty. In sociology, Deinhard (1970), and Adorno (1970) most famously, looked at the impact of the arts on society and culture, using visual arts and differences in preferences or taste in those arts as a focal subject of inquiry (see also Benjamin, 1935). Early research by Eysenck (1940) looked at individual taste in aesthetic preference or art judgement. This work primarily looked at measuring taste (T) as "good" or "bad," in other words as a skill or talent that some individuals were more (or less) inclined to have in discerning quality of art. Then in 1984, Bourdieu wrote a formative work on the consumption of the arts, titled "Distinction", which connected preferences for certain visuals over others with social status. In his book he discussed research that indicated a stratification of taste in art along societal lines based on social indicators such as education and class. His work along with others demonstrated that there were in fact differences in preference for art.

Psychologists, like Furnham, Chamorro-Premuzic, and Reimers, followed with research that found that preferences for representative art were linked to individual differences like conscientiousness, and preferences for abstract art were linked to neuroticism. Individuals who scored high in openness to experience were also open to many types of art but were more likely to find contemporary art (abstract, Japanese, and

pop-art in this particular study) appealing (Cleridou & Furnham, 2014; Furnham & Walker, 2001).

Fewer studies have attempted to tie these individual differences in visual preferences to political leaning. In one early study, individuals who self-identified as conservative were observed to prefer paintings that were simpler and more representative (realistic) than complex or abstract, when compared to those who identified as liberal (Wilson, Ausman, & Mathews, 1973). Recently, a 2018 survey of British participants linked these same preferences for realistic paintings to support for Brexit—a result similar to the correlation they found between support for Brexit and education level. The authors of this study had argued that, because Leave supporters scored higher on conscientiousness but lower on neuroticism and openness (as the authors noted from other studies), and given "Leave" supporters' general proclivity toward conservatism, supporters of Brexit would also show a preference for realistic art.

The above works focus on fine art. However, when it comes to strategies for appealing to particular groups, such as particular political groups, graphic designers, art directors, commercial illustrators, and other creative strategists must often create visuals to use in messages that are intended to reach, and possibly persuade, a target audience. The focus of this dissertation is therefore on visual design rather than fine art.

Graphic designers and other creative directors differentiate their field from traditional fine art based on one main aspect. Their work must function, and that function is generally very specific. The function of a piece of visual communication may differ in qualities depending on the client, product, or service they may be creating visuals for, but the overall function is to communicate a message to an intended audience. That message

is typically agreed upon ahead of time by the client, internal agency strategists, and sometimes by the designer/ad creator themselves. From there, it is the responsibility of that designer, art director, or commercial artist to create visuals that will pass along that message to the targeted audience by a chosen appeal (exciting, engaging, touching, shocking them, etc.). Although many advertisers will follow up with some type of data-driven or qualitative research to see if the message resonated with the intended audience, much of the work done in the field is based upon the creative team's experience.

Thus, the functional aspect of design is the key distinction between design and art. Design does not differ from art in the need to be appealing to the viewer or to elicit an emotion. Both art and design can appeal differently to different people. However, design does differ from art in that it must convey an intended message that is effectively received by the appropriate audience. Beyond mere reach (audience is exposed to the message), the most successful design, and therefore the highest quality design, should appeal to the intended audience at a minimum. As Berlyne (1974) argued, the extent to which an audience can find meaning or value in a message is a main factor in predicting the audience's aesthetic inclination toward the message (Martindale, Moore, & Borkum, 1990). In other words, audiences for whom a message is intended should have greater levels of liking of that message. Designers who understand their audience's preferences can produce better visual messages to suit those preferences.

The current dissertation will examine whether there are overarching patterns in political orientation and visual preferences, in addition to corroborating prior studies that have found links between visual preferences and personality characteristics. In addition to examining these relationships with fine art examples, this dissertation extends the work in

visual preferences to visual design, representing visual styles such as level of representativeness, using fonts and logos. In this way, the current dissertation extends the study of artistic preferences to the profession of advertising. Advertising uses visual design, built from art but with function, as noted earlier. As advertising mogul David Ogilvy said, "Advertising is not an art form, it's a medium for information, a message for a single purpose: to sell." In advertising, visual design is a critical part of the message that is passed to a target audience for the purpose of selling, persuading, and/or calling to action. Creative advertising teams tend to have both a copywriter to manage verbal aspects and an art director to manage visual aspects of a campaign, working together to ensure the whole (message) is greater than the sum of its parts. The goal of this dissertation is to provide original research that can be used to guide graphic designers in creating visual aspects of a message that optimally target and appeal to audiences defined by political orientation. Part of this goal is to develop a measure using visual designs in the form of fonts and logos to assess an individual's preference for basic styles, using as a point of comparison an existing assessment of visual preference using fine art.

In the next pages, literature on visual taste and preference is reviewed, which includes a discussion of style dimensions (e.g., representativeness) studied within fine art and how those dimensions can be reflected in visual designs. Following this section is a review of literature linking visual preferences with personality and with political leaning. After these sections, a model connecting personality characteristics, political leaning, and visual preference is presented.

CHAPTER 2

VISUAL TASTE, VISUAL PREFERENCES

The idea of taste, having different tastes for specific forms of art and imagery, can be found within philosophical discussions of beauty that go back as far as Plato's *Republic*. However, it wasn't until the mid-eighteenth century with Hume (1757) in *Of a Standard Taste*, Gerard (1759) in *Essay on Taste*, and finally Kant in *Critique of Judgement* (1790), that the idea of taste began to be defined and differentiated as a specific concept tied both to individual development and to societal norms. "It is natural for us to seek a Standard of Taste, a rule by which the various sentiments of men may be reconciled; at least, a decision, afforded, confirming one sentiment, and condemning another," wrote Scottish philosopher David Hume. Hume then tried to resolve what appear to be two contradictory observations; one, that people disagree about what is good and bad art, and two, that we need agree that some works of art are excellent and above all other work. To this end, Hume discussed five principles for recognizing "true" critics— "strong sense, united to delicate sentiment, improved by practice, perfected by comparison, and cleared of all prejudice, can alone entitle critics to this valuable character" (Hume, 1757, pg. 23).

From these works, rhetoricians built up the notion that taste is a faculty in "the same status as the faculties of reason, emotion, or imagination" (Crowley, 1995, p. 13). Crowley identified four rhetoric textbooks from the mid 19th-century that conceived of

taste as a quality that can be held by an individual. Like Hume, these 19th-century textbook authors discussed five capabilities needed to practice good taste, which Crowley summarized as imagination, method ("a clear and distinct apprehension of things"), perception, sympathy, and judgment. These capabilities were tied to emotional experience, and if someone was to improve their taste, they needed only to have "more and better experiences" (p. 14). Taste was therefore associated with education and circumstance, and the universal standard of taste, like all frameworks of the time, was set by men at the highest levels in each (Quackenbos, in Crowley, 1995).

Recent work in sociology has provided evidence of a link between the concept of taste and socioeconomic status, showing that members of elite social classes had higher levels of taste, based on the set standard defined by classical principles, whereas the common people had lower levels of taste (Bourdieu, 1984; Holbrook, Weiss, & Habich, 2004; Kraaykamp, 2002). Specifically, high levels of taste were defined by classical ideals of culture, such as classical music, opera, plays, ballet, and the art of the master. Lower levels of taste were defined in terms of popular or folk culture—works that reflected the lives and crafts of "common" people. Along with this perspective arrived the terms "highbrow" and "lowbrow" culture. These early categorical definitions of highbrow were tied to Anglo-Saxon Western European culture, while the material of the lowbrow originated in minority and immigrant cultures.

The hegemonic categorization of taste as a construct built by "civilized men" continues to be an issue within the academy and within the applied fields of marketing, advertising, and graphic design. Minnich, a feminist scholar, calls this convention "hierarchically invidious monisms," which are described as any "system in which one

category is taken to be not literally all there is, but the highest, most significant, most valuable, and, critically, the most real category—which sets up all others to be defined and judged solely with reference to that hegemonic category" (2010, p. 53). This reference against a hegemonic category defined based on class is alluded to in the Oxford dictionary's definition of taste as "the ability to discern what is of good quality or of a high aesthetic standard" (Merriam, n.d.).

As sociology research progressed in the 1980s and early 1990s researchers reported a generational shift in cultural consumption. Higher-status and younger consumers were now more likely to also engage in lowbrow activities as confirmed in a 1982 national American survey and a replicated survey in 1992 (Peterson & Simkus, 1992). With this shift arrived a shift in terminology. The snob had morphed into the omnivore—the person from a high social stratum who engaged in both highbrow and lowbrow culture. Of significance, this same shift was not mirrored in lower-status classes. While the those in the higher SES sought out culture at a variety of levels, those from the lower SES did not.

Peterson and Simkus (1992), in their discussion of the shift to omnivorousness, suggest that the high class might not just enjoy engaging in lowbrow culture, but their engagement with this material might be at the level of intellectual appreciation. Bourdieu, in his social critique *On Distinction* (1984), theorized a difference between personal enjoyment and intellectualized appreciation. The distinction is important in that, although an omnivore may embrace bluegrass music, comic books, and inexpensive canned beer, lowbrow culture does not become a part of how the omnivore self-identifies. "Rather, they appreciate and critique it in the light of some knowledge of the genre, its great

performers, and links to other cultural forms, lowbrow and highbrow" (Peterson & Simkus, 1992, p. 904).

The move to omnivorousness is exemplified on the inside back page of the *New York Magazine* and is a striking, and often hilarious example of the merger of design, cultural identity, and taste. Known as the "Approval Matrix" (see Figure 1) it is always subtitled "Our deliberately oversimplified guide to who falls where on our taste hierarchies."

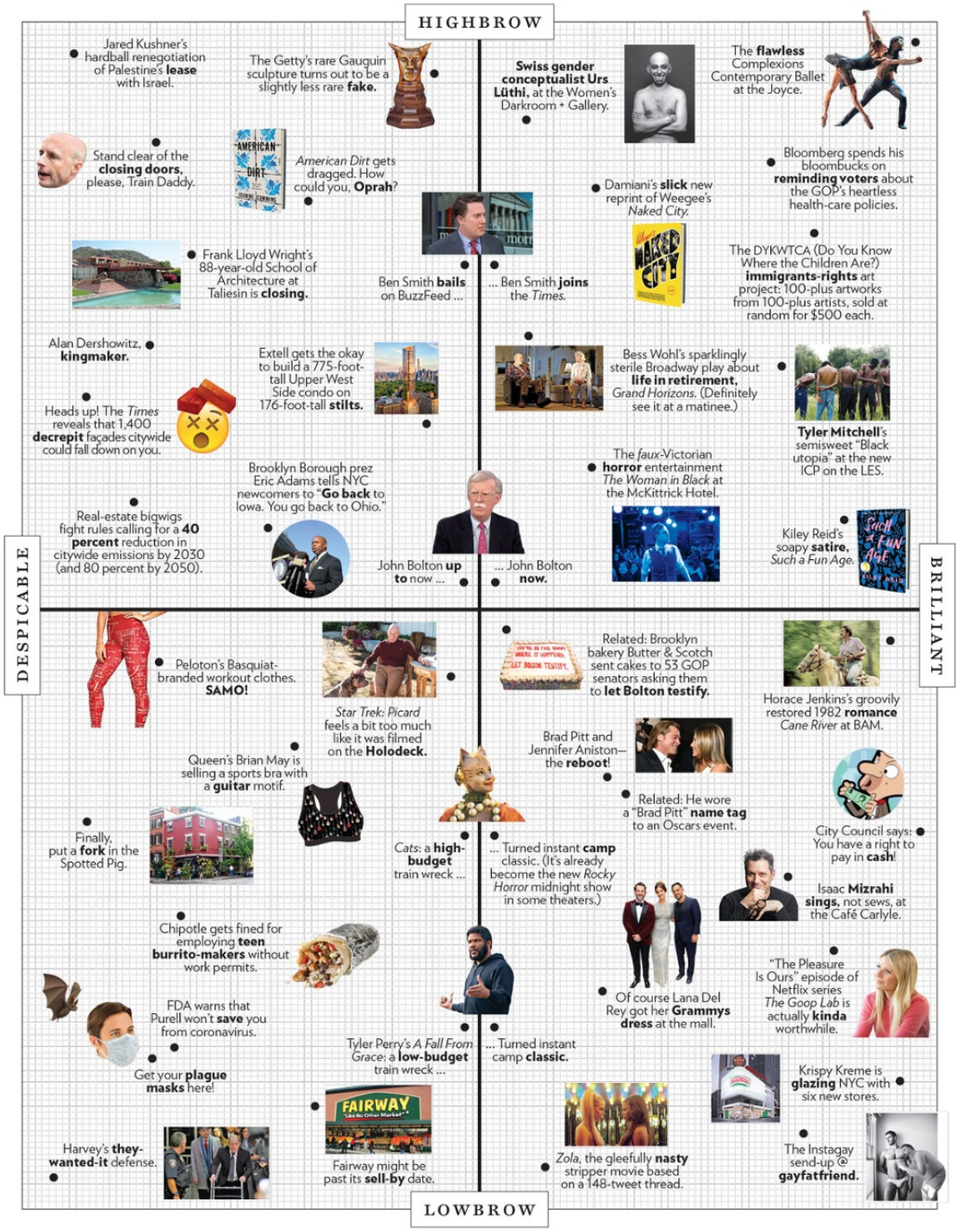


Figure 1. The Approval Matrix published in New York Magazine retrieved from https://nymag.com/article/2020/02/the-approval-matrix-week-of-february-3-2020.html on 2/9/20.

First running in the newly redesigned *New York Magazine* in November 2004, the Approval Matrix has been so popular that it has inspired its very own fan blog and a spin-

off show on the Bravo channel (Losowsky, 2010). The matrix itself is a grid made up of four quadrants labeled vertically from Highbrow to Lowbrow and labeled horizontally from Despicable to Brilliant. Within those quadrants are cut-out images with short captions across a background of blue-lined graph paper. The tone is tongue and cheek and mocks the very notion of highbrow and lowbrow culture while also reinforcing it. But the messages are not the only contrarian elements. The analog, simplified, DIY-style of the visual layout runs intentionally contrary to the upscale styling associated with "high culture" and with the visual brand of *New York Magazine*.

Moving from Taste to Preference as the Preferred Concept

As the research on taste developed, the concept of what was "good" versus "bad" taste became less objectively defined. Taste became linked to a variety of psychological factors. With this shift came studies that attempted to link responses to art to individual differences outside of social stratum. For example, people with a preference for art that was abstract, asymmetrical, and complex were identified as people with a greater knowledge and familiarity with art and/or design (Axelsson, 2007; Kozbelt, 2006; Locher, Smith, & Smith, 2001). Those with less knowledge showed a preference for visuals they found familiar, as well as for art that was more prototypical, simpler, and easier to process or comprehend (Reber, Schwarz, & Winkielman, 2004).

These studies exemplify aesthetic psychological research, which has offered the perspective that aesthetic judgements, like other judgments, are impacted by cognitive, emotional, and behavioral aspects but are also affected by the qualities of the object being judged (Hager, Hagemann, Danner, & Schankin, 2012). Empirical psychological research on aesthetic judgment began with Birkhoff, who described the amount of pleasure

received from art as being a function of the proportion of complexity to order (Birkhoff, 1933). Eysenck most famously built upon this definition of aesthetic judgment by identifying a "T" factor, described as "good taste" and measured as aesthetic sensitivity, or the ability to identify differences in good design and harmony (Eysenck, 1940; Eysenck, 1941; Eysenck, 1983). Eysenck also described a "K" factor that described a preference for complexity and has been further associated with creative thinking and art ability (Bezruczko, Manderscheid, & Schroeder, 2016; Bezruczko & Schroeder, 1994; Eysenck & Furnham, 1993). In 1963, Meier developed a scale for Aesthetic Perception and in 1985, Götz developed the Visual Aesthetic Sensitivity Test, both of which have been widely used. Leder et al. (2004) later developed a model of aesthetic appreciation and judgment related to the balance of visual features.

Based on critiques of each of these measures, including their lack of a conceptual framework and unidimensionality, Myszkowski and Storme (2017) revised Eysenck's measure of aesthetic sensitivity, correlating this new measure of "good taste" with intelligence, openness, and divergent thinking (Myszkowski, Storme, Zenasni, & Lubart, 2014; Myszkowski, Çelik, & Storme, 2018). Myszkowski and Zenasni (2016) also proposed a measure that included both an "Aesthetic Quotient" or "AQ", which is linked to artistic knowledge, and "good taste" or "T" based on consensus and experts, representing the type of categorization that fuels issues of classism.

Specifically, the measurement of "T," or taste, supposes that there is an external standard of beauty, a supposition which is potentially problematic for those in the field of visual communication. Although these judgments may work in the area of fine art, judgment by an expert or by consensus might be insufficient to guide marketing,

advertising, and graphic design decisions. These applied fields rely on the successful appeal of messages targeting specific audiences based on the audiences' standard of taste, rather than some expert-defined standard. Holbrook (2005) and colleagues (Holbrook & Addis, 2007) explored the concept of expert versus popular taste in films using IMDB ratings, as compared to critic ratings. In both studies, the authors found only a weak relationship between expert and popular judgment, concluding that evaluations by the public were likely based on individual evaluations of enjoyability, rather than any type of "excellence" as evaluated by the experts. These studies not only attest to the complexity of taste as applied to individuals, but they also allude to (although they do not directly address) the role that commoditization, branding, and audience targeting have in defining taste in the modern market. The American television and film review aggregation website, Rotten Tomatoes, has used a model emblematic of this division between expert and audience to its benefit. The site displays two scores—a critics' score and an audience score—for each film/show evaluated.

Jacobsen et al., (2006), an experimental psychologist, has offered an extensive framework that provides a multidimensional view of the different factors that might influence a person's judgment of artistic work. His proposed framework for the psychology of aesthetics is reproduced as Figure 2. Jacobsen (2006) describes his ultimate goal as a unified theory for the mental processing of aesthetics using each of the different viewpoints bulleted below. His work, and others since, has moved into the world of neuropsychology, identifying physical manifestations of preferences and visual taste, and defining a new area of research, neuroaesthetics (Chatterjee, 2011; Höfel & Jacobsen, 2007). Yet, the focus for the majority of literature continues to be on traditional

art and ignores other forms of visual communication.

As shown in Figure 2, the psychology of aesthetics is categorized as follows:

- Diachronia: Aesthetic preferences that may change with time;
- Ipsichronia: Social/cultural processes that may shape a person's aesthetic opinions;
- Mind: An individual's mental model of the visual stimulus or emotions, which could influence aesthetic judgments;
- Body: Brain activities that could affect aesthetic evaluation processes;
- Content: The stimulus being evaluated, which could influence aesthetic processing;
- Person: The evaluator's background, which may play a role in aesthetic preference;
- Situation: The surrounding circumstances (including time and place) that could influence aesthetic choices.

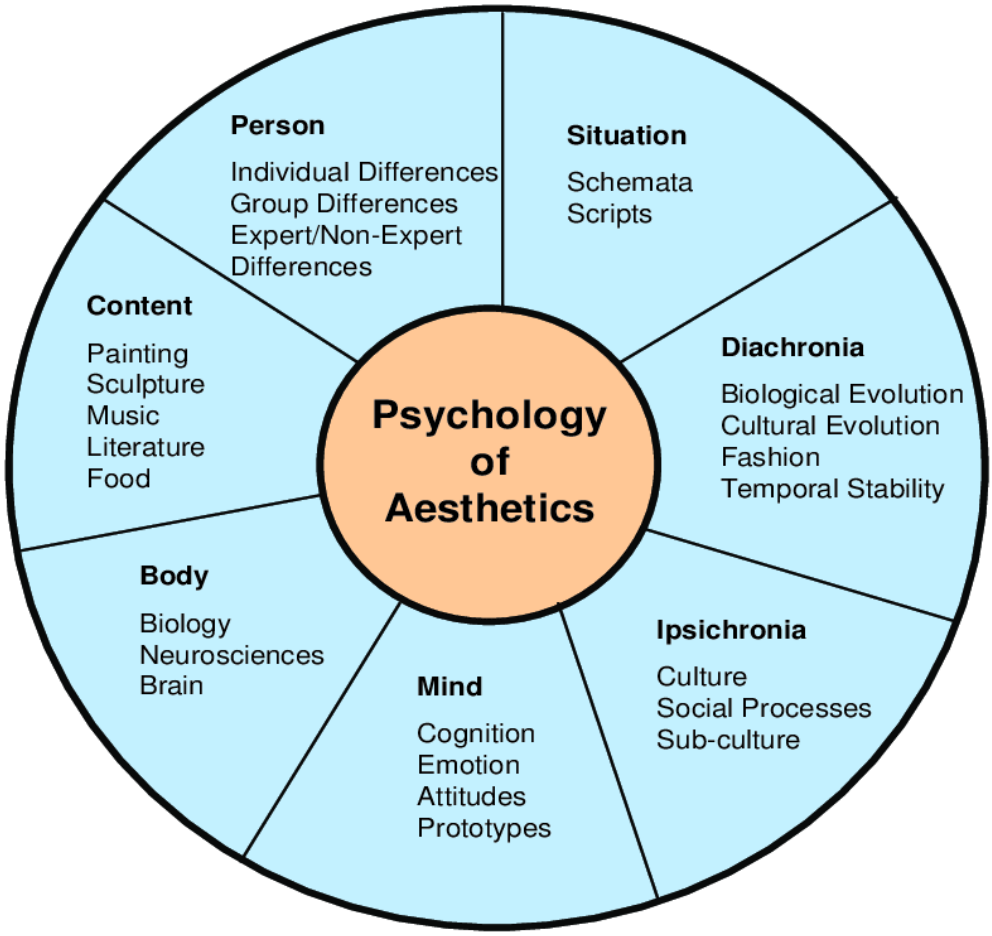


Figure 2. *The framework for the psychology of aesthetics(Jacobsen, 2006).*

In addition to identifying these domains of influence on aesthetic preferences, Jacobsen (2006) notes a key challenge in studying visual aesthetics with experimental methods as being "the conflict [lies] between the degree of experimental control on the one hand and the range of generalizability of the findings on the other" (p. 156). As he explains, experiments require that only controlled variations are made, and so geometrical shapes and lines become the stimulus material for the scientist, in lieu of

more complex objects that would afford more generalizable results. An excellent example of the stimuli Jacobsen (2006) references is shown in Figure 3.

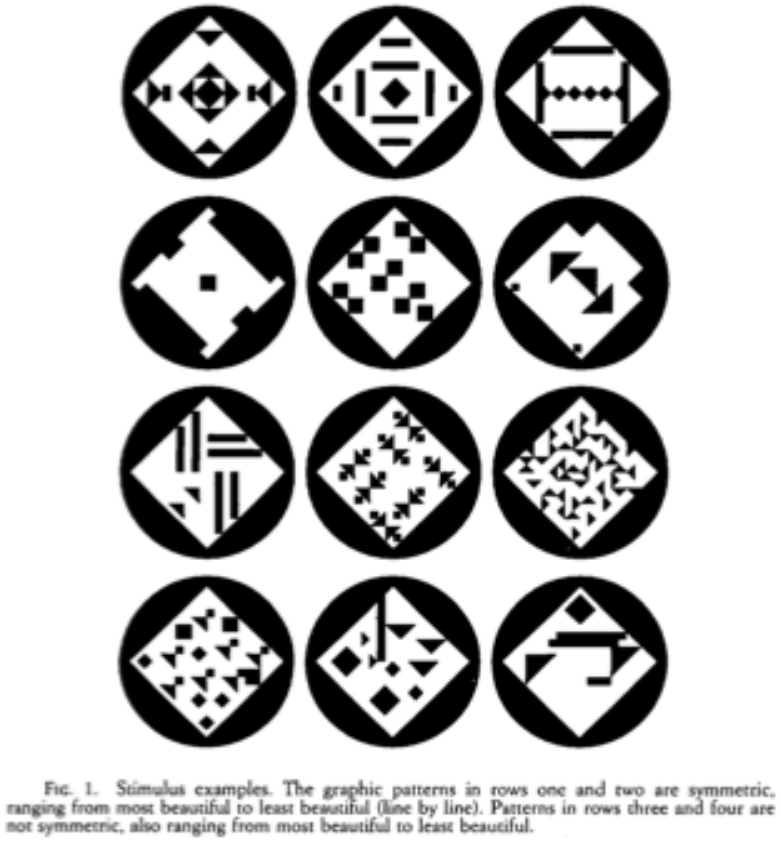


FIG. 1. Stimulus examples. The graphic patterns in rows one and two are symmetric, ranging from most beautiful to least beautiful (line by line). Patterns in rows three and four are not symmetric, also ranging from most beautiful to least beautiful.

Figure 3. Stimulus reproduced from Höfel & Jacobsen, 2003.

Jacobsen's (2006) model represents the most comprehensive framework to date, dealing with the complexity of visual aesthetics and suggesting a model for studying the types of visual design, such as signage or logos, which are common forms of output from visual communication professionals. This framework is therefore useful as a guide for understanding how a person's individual characteristics, including level of expertise with design, socioeconomic status and education level, personality characteristics, and other

markers of identity, contribute to preferences for one design versus another.

Specific to expertise, the notion of an expert, or one highly informed in visual aesthetics, is important to predicting how people will view and accept certain forms of art and elements of design. In a 1995 study, Smets and Overbeeke conducted four experiments looking at how design was expressed in packaging for desserts. In their fourth experiment, they found evidence that while designers and non-designers might assess visuals in the same way functionally and using the same dimensions, design students were better able to differentiate their judgments compared to non-design students. Bloch, Brunel, and Arnold (2003) pointed to this study as rationale for developing their scale to measure individual differences in the centrality of visual product aesthetics (CVPA). Those with higher CVPA scores can be described as design-minded or "sensitive" to design, whereas people with low scores are more apathetic to the aesthetic aspects of a product's design. This is important to the current study—when considering the associations known between people of higher artistic knowledge or "taste," people who score higher in CVPA can be assumed to have a preference for an aesthetic that is more complex and less conventional, which includes a preference for abstract art.

Bloch, Brunel, and Arnold's CVPA measure is used to assess the level of importance, or significance, a person attributes to the look or aesthetics of a product or object, compared to other aspects such as cost or functionality (2003). The CVPA measure is comprised of three dimensions, value, acumen, and response. Assessment of "value" focus on the worth a consumer ties to the aesthetics of a product, i.e. "Owning products that have superior designs makes me feel good about myself." The second

component, acumen, is most directly related to expertise and asks questions such as, "Being able to see subtle differences in product design is one skill that I have developed over time." Finally, the last component, response, looks at emotional response linked to product aesthetics, i.e. "If a product's design really "speaks" to me, I feel that I must buy it."

As a self-reported measure, CVPA allows access into the perceived aesthetic expertise of the consumer which cannot be assessed by other measures of expertise such as those that ask for levels of art and design education. Some have referred to those high in CVPA as having a sensitivity to design that can act as a moderator, as was done in a study looking at packaging design (Becker et al, 2011). In this packaging design study, the researchers looked at the influence of a package's shape curvature (how angular or curved the package was) on the taste of the product (yogurt, in their experiment) contained within that package. They found that those high in CVPA were more sensitive to the impact of the packaging shape. Participants in their experiment found the taste of the yogurt more sharp or bitter in the more angular package as compared to the rounder package design. This finding suggests those high in CVPA might have a preference for curved rather than angular shapes, or at least that their associations with curved shapes are more favorable than associations with angular shapes. Those low in CVPA showed no difference in their taste experience between the two conditions. Of note, the CVPA measure, which was originally applied to the visual aesthetics of products (Bloch, Brunel, & Arnold, 2003), has recently been adapted into a specific measure for web design, named the Centrality of Visual Website Aesthetics measure (Pengnate, Sarathy & Arnold, 2019).

To provide an example of research that has placed artistic aesthetics into the context of a person's psychology, I next review specific areas of work that have attempted to correlate and predict people's preferences for or enjoyment of different artistic forms. Specifically, I review an example pertaining to music preference. Following this example, I describe work that focused on aspects of interior design.

Music and Interior Design

Rentfrow and Gosling (2003) developed the Short Test of Musical Preferences (STOMP) to identify preferences for differing musical categories and linked those preferences to the Big Five personality traits of Neuroticism, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness (see Costa & McCrae, 2008; McCrae & Costa, 1987). The STOMP bases its assessment of preferences for music genres on a prior categorization of similarities of musical genres (e.g. blues, jazz, classical, and folk were categorized as reflective and complex)—similarities that were used to define characteristics that differentiated music types based on theme and emotional response to that theme. The STOMP then connects preferences for these defining characteristics to the participant's dominant personality type(s) in order to associate major music characteristics with personality. A version of the test can be seen and taken at www.outofservice.com/music-personality-test/).

Ritterfeld, Cupchik (1996) and colleagues (Ritterfeld, 2002) used a similar approach to link personality with preferences for interior design styles. In 1996, Ritterfeld and Cupchik published three factors characterizing different styles of interior design (living rooms specifically)—decorative, stylish, and familiar—by using a number of scales describing living rooms and testing which descriptions were easiest vs. most

difficult for participants to apply to those rooms. See Figure 4 for an example of the living room stimuli.

FIGURE 1. Examples of Decorative, Stylish, and Familiar rooms.

Figure 4. Stimulus reproduced from Ritterfeld & Cupchik, 1996.

Ritterfeld and Cuperchik (1996) revised the categorization of interior design, matching this new categorization to pre-existing categories of West German lifestyle preferences. One lifestyle preference was that of "high culture," defined by preferences for perfectionism, education, and contemplation and exemplified by activities, for example opera attendance, which showcased all three preferences (perfectionism, education, contemplation). "Trivial" was another lifestyle preference, which was described as a preference for harmony and anti-eccentricity. A third lifestyle preference was dubbed the "sensation seeking schema," identified by a narcistic orientation and with

preferences for the anti-conventional and activities such as drinking and risky sports. These three lifestyle categories were correlated with three matched interior design styles as follows: high culture: elegant, classic, and noble; trivial: traditional, harmonious, cozy, comfy, and relaxed; sensation-seeking: individual, extravagant, and modern.

Ritterfeld and Cuperchik (1996) further established the link between lifestyle and interior design preferences by asking research participants to rate their liking of (images of) couches that were intended to typify the style characteristics associated with high culture, trivial, and sensation-seeking lifestyle categories. During this procedure, the authors found that, compared to couches that were liked by the participant, couches that were disliked were judged faster and with more certainty. This observation was seen as evidence that negative distinctions are more automatic, which has potential implications for how sorting activities might be affected if participants are asked to focus on items they dislike (engaging in more automatic processing) versus asking participants what items they prefer (engaging in more deliberate, careful processing that might include self-correction).

Marketers, advertisers, and graphic designers will often engage in research that attempts to correlate preferences with individual differences during the initial stages of message development to identify the best messages to use when attempting to appeal to a particular target audience. The goals of these types of exercises are, again, about maximizing audience appeal, such that successful designs are seen as having high value or meaning (described by Berlyne, 1974) for the target audience, which is then manifested as the audience's aesthetic inclination toward the design, or more simply put, liking the design (Martindale, Moore, & Borkum, 1990). To this end, consumer

marketing research tools (e.g., Simmons data) and focus group testing are commonly employed to identify links between brands, lifestyle differences, and identity. Unfortunately, I was unable to find a specific measure among scientific literature or professional publications that attempted to assess visual preferences and connect these visual preferences to individual characteristics. Yet, this type of assessment could add a valuable dimension of insight to visual designers, especially when considering the business of design.

An important observation from the reviewed research is that the researchers cited above needed to identify dimensions, or characteristics, of fine art, music, and interior design to connect with personality characteristics. Thus, the same exercise is needed for visual design. In the following section, I review principles and dimensions of visual design, and then I present what I argue to be two universal dimensions that can be manipulated and examined in light of the existing literature that connects artistic preferences with personality.

CHAPTER 3

DECONSTRUCTING DESIGN QUALITY

Visual design quality can be defined as the optimal arrangement of design elements, such as use of lines, color, framing, and so on, that inform visual taste. It is through these elements of design that we can connect the objective aspects of design excellence, as defined by experts (e.g., balance) to an audience member's subjective responses to the design which, combined, define the audience member's preference for a specific visual aesthetic. Relevant to the current dissertation, this overall preference may relate in meaningful ways to other aspects of a person that should be used to inform the production of messages intended to target particular audiences.

Where design quality meets function is in its leveraging of a person's personal preference for a visual aesthetic; design quality can influence whether or not people seek more information relevant to the designed message if their first impression of the message is positive, in other words (Duck, Terry & Hogg, 1995; Champlin, Lazard, Mackert & Pasch, 2014). For example, in advertising, design quality can influence everything from value and price to perceptions of effort, authenticity, and perceived product quality (Modig & Rosengren, 2013; Modig, Dahlen & Colliander, 2014; Napoli et al., 2014). In print design, layout, color, object size, visual hierarchy, and font all contribute to overall impressions. In video design, audio quality, resolution, timing, framing, and more contribute to the video's overall aesthetic quality as perceived by the

user.

In information theory, research has placed an emphasis on the objective nature of good design by looking at the balance of two sets of dimensional properties across design elements—complexity versus simplicity, and novelty versus familiarity. With regard to complexity, Berlyne (1974) noted a curvilinear relationship, also known as the inverted U-shape function, between preference and complexity, in that the most well-liked designs were not too simplistic and not overly complex. These findings have informed years of research, most recently in the area of web design, about the functional aspects of visual design.

In addition to appealing to a target audience member's aesthetics, designs are also only considered effective if they convey the intended meaning. Although this dissertation does not specifically address meaning with respect to a brand identity, persuasive argument, or the like, the idea of personal preference might itself be a signal that "this message is for me," contributing to its appeal. Therefore, I review the literature on the conveyance of meaning with visuals.

Describing What We See

Any discussion on communicating visual messages would be incomplete without a discussion of semiotics. Semiotics research has focused on the connection between visual "signs" and identity, on the social or sign value of visual objects, as can be seen in interior, fashion, and industrial design. Sadalla (1979, 1987, 1988), along with a handful of other researchers, has explored the correlation between social status and taste, between symbols of self-representation and the expression of identity. This research can be linked to processing theories and heuristics, specifically social heuristics. "The meaning in daily

life aesthetic material can be described in terms of semantic connotations which are related to lifestyles" (Ritterfeld, 2002, p. 370). In other words, while both a Toyota Prius and a Porsche Boxster are both functionally identical (they get you where you need to go), they do so with differences in social meaning and lifestyle. Yet, there exists no social scientific measure to identify these differences.

When a consumer sees the front entrance of a store, they should be able to make a relatively accurate assessment of the store's content without needing to be familiar with the store. From signage to window displays to the colors used throughout, viewers are deriving meaning from the visual components, including mood, style, values, and even a price point. Consider the two visuals in Figure 5. When asked for their thoughts about what they see, audiences are likely to use adjectives that sound experiential, such as "fun" or "romantic." In Figure 5, we might assume consumers would associate "fun" with the left design and "romantic" with the design on the right.

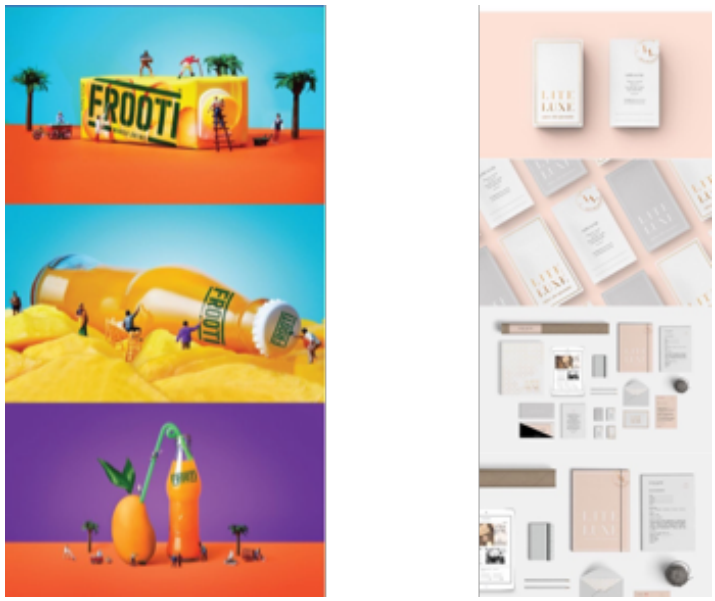


Figure 5. On the left, branding for juice brand Frooti by Sagmeister & Walsh. On the right, branding for a skin rejuvenation service for women called 'Lite Luxe'by Smack Bang Designs.

Yet, the question becomes what precisely is it about a design that does the work of communicating these meanings? Multimodal analysis is a systematic method for understanding visual communication that is built upon the theories of semiotics. Kress and Van Leeuwen (1996) pioneered the multimodality approach as a method that begins with a visual's basic components, and then compares those components with the others on the "page." It looks at the relationships between the components and how they work to create meaning.

The Formal Language of Design

To understand the way in which designers discuss the language of visual design it is important to begin where every art and design class has always begun, with the elements and principles of design for two-dimensional spaces. The elements of design are the physical elements, the building blocks of a visual design. The principles of design are how the elements of design are organized. A design is created using the elements of line, shape, space, color, value and texture and arranged using the organizing principles of rhythm, movement, unity, variety, emphasis, proportion, balance and scale. It is important to note that these terms are not exclusive and that the principles are related and often overlap. A common metaphor used in art and design likens design elements to words and punctuation, the elements of writing. Therefore, the principles of design are like the rules of grammar, organizing the words and punctuation to provide meaning.

For this dissertation I begin by focusing on two related elements, line and shape. A line is a point in motion, or all the points between an end and starting point. A line can have many different qualities. It can be curved or straight, thick or thin, short or long, precise or blurred, flowing or erratic etc. Lines can also have direction, such as

horizontal, vertical, or diagonal. A shape is simply a flat two-dimensional area enclosed by lines. A shape can take on the meaning conveyed by the quality of its defining lines, and it is the differences between curved and angled lines, and the shapes those lines create, that is the basis of the first of two key aspects of the study at hand.

Angular vs. Curvilinear Preferences

In design, curvature is often, but not always, associated with organic elements because curves mimic the types of lines found in nature—fluid, rounded, and irregular. In comparison, angular lines, which are rarely found in nature, are characterized as inorganic and man-made. Semiotics literature discusses what these different types of lines, angular and curved can convey. For example, sharply angled lines might suggest anger, excitement, danger, and/or chaos. whereas clean geometric lines might suggest a sense of order, conformity, and reliability. In comparison, curves may communicate grace, dynamism, and spontaneity.

These descriptions are seen throughout design textbooks, websites, and other resources. For example, see Figure 6 from a design lesson that shows a table describing different variants of lines and the "psychological effects" of these lines. Note, for instance, the psychological effects attributed to a restrained curve: flexible but controlled, graceful, feminine, flowing. These are similar to the psychological effects attributed to wavy lines. Full curves and bends are also associated with dynamism. Yet, in contrast, straight lines and zigzags are associated with the notion of stiffness, masculinity, and regularity.

CHART A-1

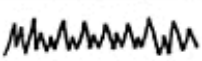
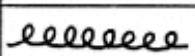
ASPECT	VARIATION	APPEARANCE	PHYSICAL EFFECTS	PSYCHOLOGICAL EFFECTS
PATH	Straight		Emphasizes angularity, counters rotundity, roundness; curves, rarely found in nature	Stiff, direct, rigid, precise, dignified, tense, unyielding, sure, masculine, austere
	Restrained curve		Slightly emphasizes curves	Soft, gentle, flexible but controlled, graceful, feminine, flowing, passive, subtle, loose; Generally more graceful if slightly irregular, not a geometrically perfect arc
	Full curve		Emphasizes curves, counters thinness and angularity	Dynamic, feminine, unrestrained, exuberant, youthful, active, forceful, unstable
	Bent		Combines straight and curved effects	This and the restrained curve are the lines most often found in nature: rivers, trees, hills. Can be both forceful and gentle, depending how used.
	Jagged		Emphasizes angularity	Abrupt, nervous, jerky, busy, unstable, erratic, spasmodic, excited
	Looped		Emphasizes roundness	Swirling, active, soft, feminine, busy, springy, unsure
	Wavy		Emphasized roundness, counters angularity	Feminine, undulating, soft, flowing, graceful, sensuous, flexible, uncertain
	Scalloped		Repeats roundness, counters angularity	Curves provide softness and femininity, sharp points provide crispness and liveliness, youth
	Zigzag		Emphasizes angularity, counters roundness	Sharp, busy, regular, masculine, jerky, abrupt, intense, stiff
	Crimped		Rough contour	Involved, complex, rough
Thickness	Thick		Adds weight	Forceful, aggressive, assertive, sure, masculine
	Thin		Minimizes weight	Delicate, dainty, feminine, passive, gentle, calm, subtle
Eveness	Uneven		Accents Bulges	Wobbly, unsure, unsteady, insecure, questioning
	Even		Smooth, reinforces smooth lines, emphasizes bumps and bulges	Consistent, definite, sure, flowing, firm, certain, elegant, smooth, A solid even line makes a direct statement of its path

Figure 6. Chart illustrating aspects of a line in lesson on Line, Space, Shape, and Form within Elements and Principles of Design by University of Houston's Kevin Rigdon, available at https://tinyurl.com/unpmzww (retrieved November 18, 2019).

Figure 7 shows examples from an interior design blog, in which the author describes the psychological effects of different types of lines in interior spaces: "Did you know that lines can actually have a psychological effect on a room? Designers use different kinds of lines all the time in order to create a particular mood or ambiance in the room they are designing. Most interiors use a combination of lines, but often times one line will be planned to dominate in order to accomplish a desired effect."

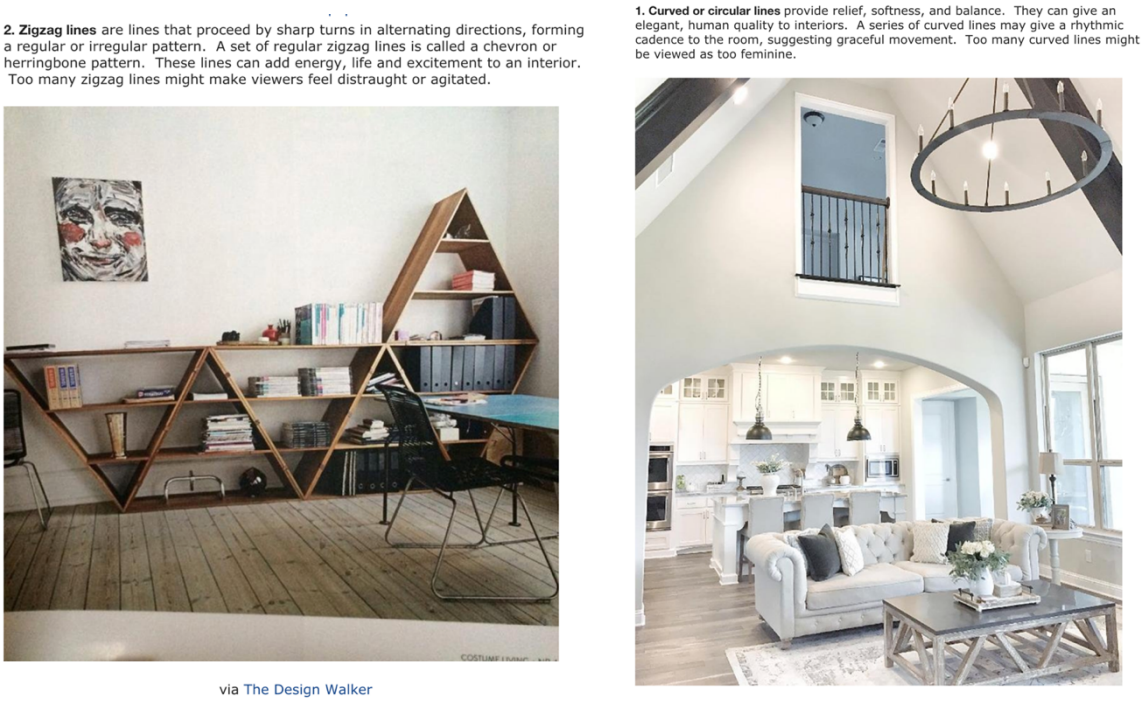


Figure 7. Images from website (Interior Design Basics, 2013).

Finally, from https://vanseodesign.com/web-design/visual-grammar-lines/, we see these same descriptions of lines when discussing implications for web design: "**Zigzag lines** are a combination of diagonal lines that connect at points. They take on the dynamic and high energy characteristics of diagonal lines. They create excitement and intense movement. They convey confusion and nervousness as they change direction quickly and frequently. They can imply danger and destruction as they break down… **Curved**

lines are softer than straight lines. They sweep and turn gracefully between end points. They are less definite and predictable than straight lines. They bend, they change direction. Curved lines express fluid movement. They can be calm or dynamic depending on how much they curve. The less active the curve the calmer the feeling" (Bradley, 2010). Some of this teaching appears to be anecdotal, but there are aspects supported in the psychology literature, specifically around the preference for curved shapes and lines over straight and angular ones.

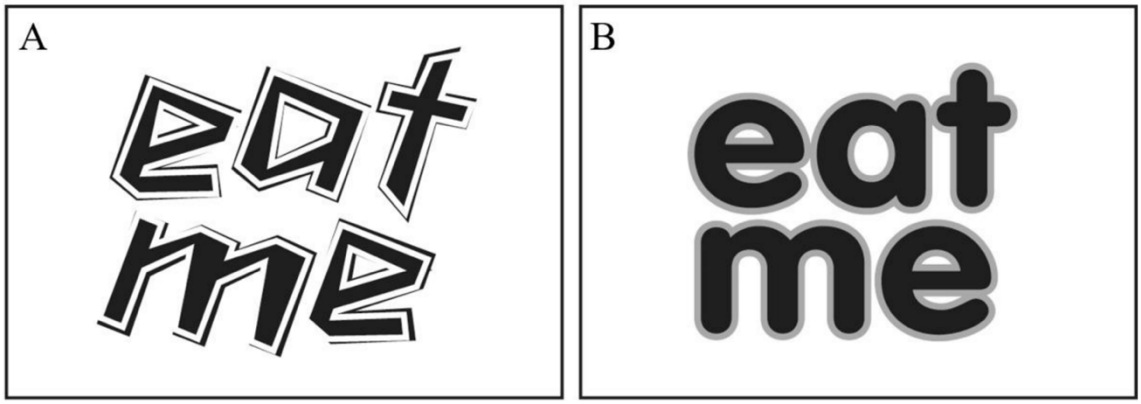
With regard to preferences, people show a small but consistent preference for the round and curved over the sharp and angular when judging lines, shapes, abstract objects, and artifacts. This overall preference for curvature is now firmly established (Bertamini, Palumbo, Gheorghes, & Galatsidas, 2016; Gomez-Puerto, Munar, & Nadal, 2016; Leder, Tinio, & Bar, 2011; Munar, Gomez-Puerto, Lopez-Navarro, & Nadal, 2014; Palumbo & Bertamini, 2016; Palumbo, Ruta, & Bertamini, 2015; Silvia & Barona, 2009) and has been tested with both explicit scales using self-reported ratings of visuals (Bertamini et al., 2015; Palumbo, Ruta, & Bertamini, 2015) and implicit, indirect measures of preference (Palumbo, Ruta, & Bertamini, 2015; Vartanian et al., 2013). The same preferences show up when lines (Bertamini, Palumbo, Gheorges, & Galatsidas, 2016; Salgado-Montejo, Tapia Leon, Elliot, Salgado, & Spence, 2015), abstract novel shapes (Bar & Neta, 2006; Bertamini et al., 2016; Silvia & Barona, 2009; Velasco et al., 2016a, 2016b, 2016c), common objects (Bar & Neta, 2006), car interiors (Leder & Carbon, 2005), architectural environments (Dazkir & Read, 2012; van Oel & van den Berkhof, 2013; Vartanian et al., 2013), logos (Jiang et al., 2015) and fonts (Velasco et al., 2014, 2018; Velasco, Hyndman & Spence, 2018) are tested. Various explanations for this

preference have been suggested from evolutionary-based explanations (Carbon, 2010) to emotional processing effects (Leder et al., 2011).

Notably, Bertamini et al. (2015; 2016) found a general appeal of curved things that encourages an approach tendency from viewers, as opposed to a general threatening quality of angular, sharp things, which seems to encourage avoidance. This finding contradicts the threat hypothesis suggested in earlier findings (Aronoff, Barclay, & Stevenson, 1988; Aronoff, Woike, & Hyman, 1992, Bar & Neta, 2006; 2007). To illustrate, Bar and Neta (2006; 2007) used functional magnetic resonance imaging (fMRI) data to suggest that the preference of curved objects over sharp-angled objects may be due to amygdala involvement in fear processing. Although this hypothesis provides us with an explanation for why there is a preference for curved over angular, the research to date also suggests that not everyone shows this general preference for curves over angles.

Some of the first research to extend the idea of audience response to visuals, to audience response to typeface specifically, was reported by Velasco et al., (2014). These researchers attempted to link different typefaces, shapes, names, and sounds with viewers' literal taste—as in associating the typeface with sweet- versus sour-tasting products. Velasco et al. (2014) found that rounder typefaces (e.g., Swis721 B1kRnd BT – Black, 44pt) were found to be more regularly associated with sweet-tasting products as compared to sour-tasting products, whereas more angular typefaces (e.g., Hollywood Hills – Regular, 53pt) were more consistently associated with sour-tasting products. Figure 8 shows the fonts used in two of the three Velasco, Hyndman, and Spence experiments from a study in 2018 that explored this association even further. Participants in another study (Blazhenkova & Kumar, 2018) associated curved typefaces with sweet

tastes, in addition to femininity and smoothness. Angular typefaces, on the other hand, were associated with sour taste, in addition to loudness, masculinity, and roughness.



"Typefaces used in Experiment 1 at the Victoria & Albert Museum for the London Design Festival on 14th September 2014: A) Modified London 2012 and B) VAG Rounded."

"The three pairs of rounded vs. angular typeface that were used in Experiment 2. A) VAG Rounded and Onyx slanted, upper case; B) Flemish Script and Klute; C) Candice and Engraver's MT slanted, upper case. Each of the typefaces was typeset to sit within a central area on an A4 page so that they appeared visually balanced (based on the suggestions of the designer). For example, the more condensed typefaces are shown a larger point size so that they appear equally prominent and it is therefore the typeface and not the scale being compared."

Figure 8. Angular versus curved typeface stimuli and notes from figures 8 and 10 from Velasco, Hyndman, and Spence, 2018.

Abstract vs. Representative Preferences

The second visual feature to be explored in this study, representative or representative versus abstract representation, is less about a specific formal aspect of art (i.e. line and shape) and more about an overall conceptual approach. Art forms can be placed upon a continuum of abstraction from representative (a.k.a. figurative and realistic) on one end to abstract and fully nonrepresentative on the other end. Art that is found on the representative end of the abstract spectrum is more clearly derived from the material world. Think of a photo or photorealistic art as exemplars of the representative end of the spectrum. In the middle is abstract art, like that of Pablo Picasso, and on the other end of the spectrum is non-representative art that has little to no resemblance to the material world, (see Figure 9 for examples).

Figure 9. Top left, an example of representative art, "Meerhaven" by Johann Anton Eismann. Right, an example of abstract art, "Girl Before a Mirror", by Pablo Picasso. Bottom right, an example of nonrepresentative art, "Le Premier Disque" by Robert Delaunay.

The word “abstract” is derived from Latin terms meaning to extract or to remove (Merriam, n.d.), so in art and design an abstracted image often has elements removed or simplified as in the examples from Picasso’s sketches (see Figure 10).

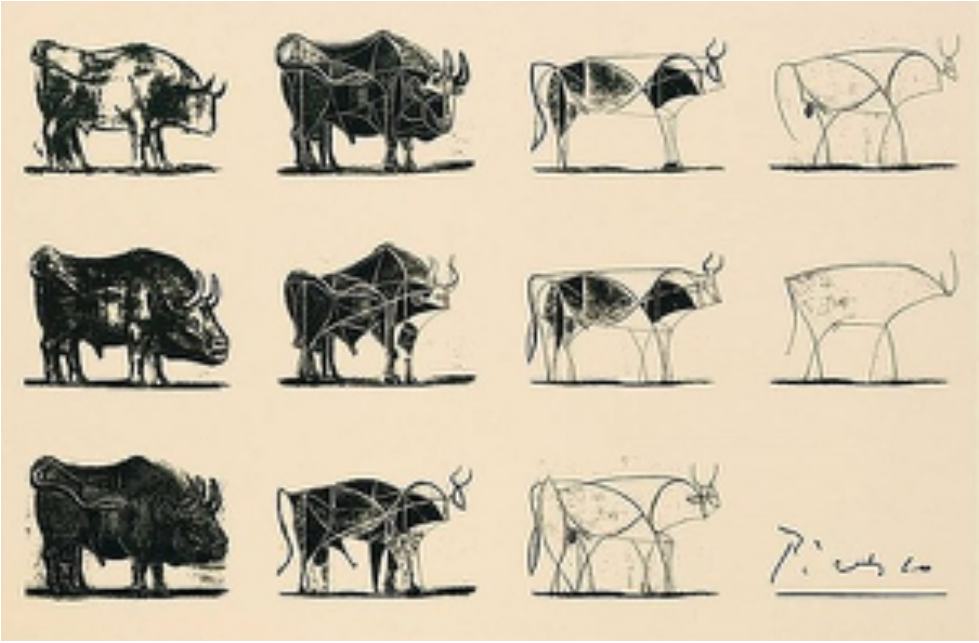


Figure 10. Sketches from Pablo Picasso of a bull moving from representative on the left to more abstracted on the right.

One important concept of abstraction is that as one moves along the continuum from representative to abstract one is also moving from specific to universal as can be seen in Scott McCloud's sketches of a face (see Figure 11).

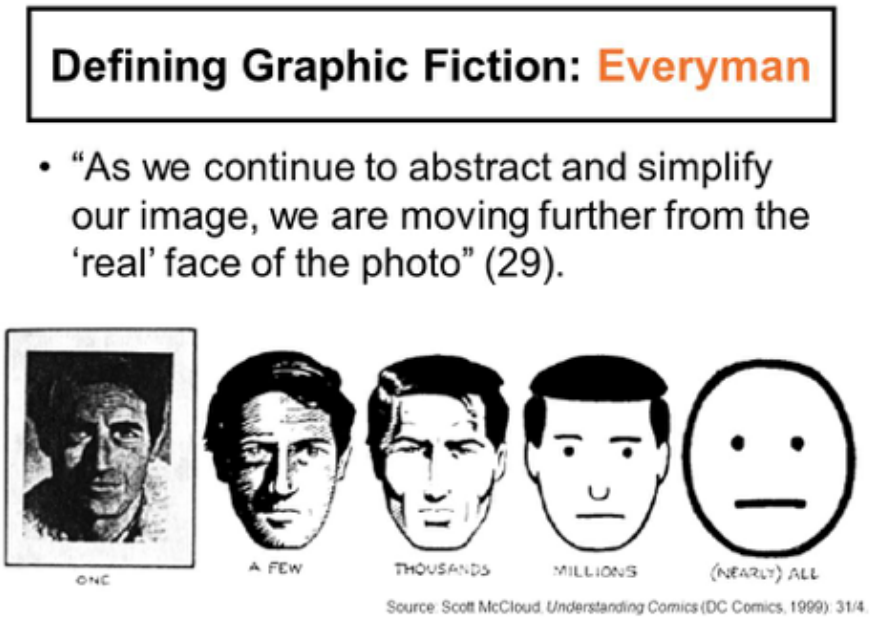


Figure 11. A slide from Scott McCloud's Understanding Comics, 1999.

In graphic design, abstracted elements are a pathway to communicating universally toward shared meaning, which is why typography, symbols, and icons are elemental tools in a graphic designer's toolbelt. Wang and Hsu (2007) suggest that as compared to traditional artists, "designers pay more attention to recognizability by observers" (p. 269) in their use of abstraction. A logo, derived from the Greek word, logos for "word" (Merriam, n.d.) act as representations of a product or service. Nike's "swoosh," designed by Carolyn Davidson, was created as an abstraction of the concept of motion (Howard, 2011). Might this distinction of purpose between art and design affect

differences in visual preference?

Almost all of the research looking at preferences along the abstract continuum have used traditional art examples for stimuli. In experiment after experiment, more representative or representative art is preferred over more abstract art (Boselie & Cesaro, 1994; Carl, Richards, Heath 2018; Cotter et al., 2017; Feist & Brady, 2004; Heinrichs & Cupchik, 1985; Kettlewell, Lipscomb, Evans, & Rosston, 1990; Reber, Schwarz, & Winkielman, 2004; Salkind & Salkind, 1973, 1997). Several studies with children have shown that this preference for realism begins at about 8 to 11 years of age but can appear as early as kindergarten and continues to be a prevailing aspect for visual preference in adults untrained in the arts (Ahmad, 1985; Taunton, 1980). These findings seem to indicate that a preference for abstract art in adults is a learned or environmental preference.

Rationale for this preference, like that for curves over angles, is often grounded in evolutionary theory. The theory suggests that people prefer visuals that make them feel safe, or that have a "survival value" and as representative work is more realistic it feels more familiar and familiarity is preferred (Feist & Brady, 2004; Hekkert & Snelders, 1995; Martindale, 1996; Martindale & Moore, 1988). As evidence of this, Feist and Brady point to a study of landscape art that found that more livable landscapes, such as savannas, forests, and mountains, were preferred over less livable terrain, such as deserts and frozen tundra (Orians & Heerwagen, 1992; Orians, 2001).

Some aesthetic research has shown that abstract art is rated higher in creativity (Getzels & Csilcszentmihalyi, 1976). Researchers who looked at the differences in expert vs. laymen's visual preferences found a greater propensity for experts to prefer abstract

art over representative art (Getzels & Csilcszentmihalyi, 1976; Winston, 1992; Hekkert & van Wieringen, 1996a, 1996b). Additionally, experts are more likely to prefer novel design (Haller, Couvoisier, & Cropley, 2011) over prototypical design. In explanation of this difference, researchers suggest that contemporary artists are more likely to work in abstract modes as compared to more classic artists. So, it may not be that abstract art is more preferred by experts for its abstract form, but rather that it is valued for being less prototypical, more novel, and more avant-garde. Or as Barrow wrote, "a taste for the avant-garde or the abstract is the fruit of experience overriding instinct" (1995, p. 95).

It is difficult to know how much these patterns found with art might extend to more contemporary visual design targets. For example, in evaluations of product design, Mastandrea and Maricchiolo (2014) found that expertise moderated the liking of modern-looking products, in that laypeople showed no preference between classic and modern looks, but people with more artistic expertise preferred the modern over the classic designs. Also corroborating the reviewed literature, previous research into logo strategy has underlined the advantages of using pictorial logos (logos that are more representative). Schechter (1993), for one, showed that logos reminiscent of a decipherable object add more value to the brands they exemplify. Henderson and Cote (1998) discovered that, compared to more abstract logos, more representative logos—which were more likely to convey a familiar and recognizable meaning—were more easily recognized by participants and were evaluated more positively. Likewise, Machado et al., (2015) found that "natural" logos (more representative) were preferred to abstract logos.

However, Reber, Schwarz, and Winkielman suggest that, "under some conditions,

exaggeration and abstraction may facilitate processing even more by emphasizing central features and discarding others" (2004, p. 368). For example, some research has shown that caricatures of faces are sometimes better recognized than undistorted images (Mauro & Kubovy, 1992; Rhodes, Brennan, & Carey, 1987). Much like the research into complexity (i.e. Berlyne, 1970), there may be an inverted-U relationship between abstraction and preference. Furthermore, there might be particular characteristics that mark a person's inclination to be more open to complexity. In short, what are the characteristics that explain preferences that differ from the norm? Understanding, and then predicting, which individuals might like the seemingly less popular abstract or angular styles in visual design, based on their individual differences, is the subject of the next section.

CHAPTER 4

PERSONALITY AND VISUAL PREFERENCE

Since the introduction of the Big Five personality framework in the 1980s, there has been a dramatic increase in research on traits and the individual dimensions of personality (Cawvey et al., 2017). As mentioned above, personality traits have also been shown to predict certain preferences for representative versus abstract art, in addition to other visual preferences. To understand these associations between personality and visual preferences, we must first understand what is meant by personality within this context.

What is Personality?

Personality is multifaceted and includes factors such as values, motives, and intelligence (Caprara & Vecchione, 2013). But it is the influence of personality over behavior and attitudes that makes it worth studying (Mondak, 2010). Personality, specifically through the Big Five factor measures, is also relatively universal across cultures (McCrae & Costa, 1997, 1999). Personality is not an attitude or opinion or mood, rather it is identified as a trait, an internal personal attribute. Considerable research has shown that, unlike other factors that are temporary or ephemeral, like mood, personality is stable and enduring over time (Block & Block, 2006; Jost et al., 2003a, 2003b). Even as some personality traits shift over the course of our lives, these shifts are consistent. For example, as we age, we become less neurotic and more conscientious (Costa & McCrae, 1988). Not only is trait personality stable over time, but fairly new research indicates that the effects of personality on political attitudes are stable as well (Bloeser et al., 2015).

Early psychologists identified thousands of personality traits (Allport & Odbert, 1936). In order to deal with this complexity, personality psychologists have proposed many models, but the Big Five or Five-Factor approach is the most prominent in political psychology. The framework consists of five distinct dimensions or factors, commonly referenced with the acronym O.C.E.A.N. or (1) openness to experience, (2) conscientiousness, (3) extraversion, (4) agreeableness, and (5) neuroticism. These dimensions were developed empirically through the rating of adjectives and factor analysis in a study of Air Force officers (Tupes & Christal, 1958 in Cawvey et al., 2017).

Neuroticism. Neuroticism, or emotional instability in high levels, corresponds with an increased risk of depression and anxiety. Adjectives used to represent those scoring high in this final dimension range from apprehensive and volatile, to anxious and sensitive. Conversely, those with a lower score are more likely to be surgeons or members of the clergy, and are described as emotionally stable, calm, and relaxed. (Francis & Kay, 1995).

Extraversion. Extraversion, and its converse, introversion, have been the most extensively researched of all the Big Five dimensions. Extroverts are characterized by their outgoingness, and interest in activities with others, compared to introverts, who are seen as aloof, quiet, withdrawn, and shy, extroverts are bolder and more sociable (Eysenck & Wilson, 1978).

Openness to Experience. Individuals who score high in openness to experience (a.k.a. openness) are motivated to be curious about the world and show a willingness to examine diverse perspectives. Openness and creativity are positively correlated. Individuals high in openness tend to be described as curious and inventive, and are more

willing to take risks (e.g., alcohol and drug use) (Booth-Kewley & Vickers, 1994). Those who score low on openness are typically more conventional, favoring the concrete, and showing a preference for the known over the unknown (Mondak, 2010). Notably, the openness dimension, as compared to the other four in the Big Five, is most connected with art interests, activities and knowledge, and a tendency toward openness is also correlated with an appreciation of the arts (DeYoung, Quilty, Peterson, & Gray, 2014; Furnham & Chamorro-Premuzic, 2004).

Agreeableness. Terms such as helpful, selfless, warm, kind, sympathetic, and generous are used to represent agreeableness, whereas terms such as critical, harsh, and blunt are used to represent a low score in agreeableness. Individuals who score low on this dimension, are less successful in their interpersonal relationships because they are more likely to be seen as less cooperative and more quarrelsome (Lounsbury, Loveland, & Gibson, 2003).

Conscientiousness. Conscientiousness is characterized by adjectives such as thorough, reliable, organized, punctual, task-focused, efficient, and hardworking. Individuals high in this trait show a tendency to be more concerned with health and fitness, and avoid personal risk (Booth-Kewley & Vickers, 1994). Those low in conscientiousness are more likely to be cavalier, disordered, impetuous and are more likely to be less successful in school and the workplace (Barrick & Mount, 1991).

Linking Personality to Visual Preference

It's not surprising to imagine that personality differences would inform visual taste, as individuals often use visuals (e.g. wearing a tie-dye shirt, shopping at Whole Foods, placing a political bumper sticker on your car) to put themselves on display, as

described by identity signaling theory (e.g., Berger, 2008; Berger & Heath, 2007; Berger & Heath, 2008; Gal, 2015). Even brands use visuals to convey a certain "personality" (Bernritter, 2016; Giroux & Grohmann, 2015). In contrast, research on the psychology of aesthetics has focused on characteristics of the art objects themselves. In design, the formal elements are often described as conveying specific personality differences, i.e. serif fonts are more formal than san-serif fonts (Hyndman, 2016; Mackiewicz & Moeller, 2005; Shaikh, Chaparro, & Fox, 2006). Some research has even looked at how differing typefaces can be used to communicate different brand personalities (e.g., Grohmann, Giese, & Parkman, 2013).

Research also shows that there are psychological determinants of aesthetic inclination, specifically personality differences that inform visual liking. The bulk of the research into personality differences and aesthetic taste has used the Big Five model reviewed above. The extensive body of work is this area has found correlations across all five of its domains, the most robust correlation being with openness to new experience.

Specifically, people high in openness to experience are generally higher in creativity, have greater imagination, and divergent thinking (Eysenck, 1995; Feist, 1998; McCrae & Costa, 1987; Zuckerman, 1979). They put a greater value on the arts, are more knowledgeable, have a greater appreciation for visual quality and aesthetic relativism, are more engaged, and are more likely to be trained in the arts (McCrae, 1996; McManus and Furnham, 2006; Silvia, 2007). Openness is positively correlated with a greater liking of stimuli across multiple genre, media, and art forms (Feist & Brady, 2004; Tran, Swami, Seifriedsberger, Baráth, & Voracek, 2019). As such, because openness to experience involves measuring inclination toward novel experiences and intellectual inquisitiveness,

it is not surprising that it is seen as the most significant of the Big Five dimensions associated with art. McCrae and Costa even wrote that, “artists can be considered prime examples of individuals high in openness to experience” (1997, p. 825).

A number of studies have looked at art preferences in terms of fine art paintings and different approaches to painting (e.g. abstract, realistic, pop). Correlations have been found between high openness and a preference for pop art (Furnham & Walker, 2001) and for abstract art (Cleridou & Furnham, 2014; Chamorro-Premuzic et al., 2009; Feist & Brady, 2004; Furnham & Walker, 2001a). Feist and Brady (2004) theorized that this preference for more modern and unconventional art might be due to non-conformist tendencies seen in people high in openness. In addition to conventionality, some scholars have shown that sensation-seeking, a construct often related to openness, might also play a large role in causing positive responses to abstract art (Furnham & Avison, 1997; Rawlings, Barrantes i Vidal, & Furnham, 2000; Rawlings & Bastian, 2002). These individual differences in visual preference also extend to shape preferences. Preferences for curves tend to be universal, but these preferences were significantly greater for people scoring higher in openness to experience (Cotter et al., 2017).

Although not as consistently, the remaining Big Five dimensions have also been associated with differences in visual taste. Conscientiousness has been negatively associated with greater liking of stimuli across genres and media domains, as well as visual and art activities (Chamorro-Premuzic et al., 2011; McManus & Furnham, 2006; Tran, Swami, Seifriedsberger, Baráth, & Voracek, 2019). A preference for representative art and dislike of contemporary (e.g. abstract and pop) art is associated with those high in conscientiousness (Chamorro-Premuzic et al., 2011; Furnham & Walker, 2001).

Of particular relevance to this study, more conscientious personality types show a lesser preference for abstract logo designs (Machado, Torres, Vacas de Carvalho, & Costa, 2018). The researchers explained this finding by looking at previous research showing that people high in consciousness tend to value order and dependability (Paunonen & Ashton, 2001). Thus, these people will prefer logos which are more familiar (Liao & Wang, 2009; van Grinsven & Das, 2015).

Extraversion has been linked both positively and negatively with art judgment ability, depending on the task used (Chamorro-Premuzic & Furnham, 2004; Furnham & Chamorro-Premuzic, 2004). An appreciation of aesthetic quality, aesthetic relativism, and abstract artworks, as compared to other art styles, is positively correlated with extraversion (Furnham & Avison, 1997; Furnham & Walker, 2001; McManus, 2006; Rawlings & Bastian, 2002). One study of specific art movements found that extraverted participants displayed higher levels of preference for cubist art, as opposed to the more agreeable, more conscientious and less open individuals who reported a higher preference for impressionist art (Chamorro-Premuzic et al., 2009). However, when looking at logos, people who scored higher on extraversion showed a greater preference for more representative logo designs (Machado, Torres, Vacas de Carvalho, & Costa, 2018).

Despite the fact that agreeable people seem to value aesthetics more (McManus, 2006), agreeableness has been correlated with a lesser tendency to participate in art activities, less of a preference for pop art (Furnham & Walker, 2001), and a greater liking of representative art (Furnham & Avison, 1997). Like people who are more extraverted, those who are more agreeable showed a higher preference for representative logo designs (Machado et al., 2018).

Multiple studies have demonstrated a positive correlation between neuroticism and liking of abstract and pop art (Chamorro-Premuzic et al. 2009; 2010; Cleridou & Furnham 2014; Furnham & Walker 2001; Rawlings & Bastian, 2002). However, I was unable to find other research in the literature that specifically associated visual taste differences with neuroticism. Whereas other factors of personality have been convincingly associated in some form with art interests, the results have been less consistent (or present) for neuroticism.

CHAPTER 5

ASSOCIATING POLITICAL ORIENTATION WITH PERSONALITY AND VISUAL PREFERENCE

Research into the potential connection between personality and political orientation has looked at everything from socialization by family (Campbell, Converse, Miller, & Stokes, 1960; Jennings and Niemi, 1968, 1991; Jennings, Stoker, & Bowers, 2009) and economic conditions (Fiorina, 1981), to socioeconomic status (Leighley & Nagler, 1992), and media influence (Iyengar & Kinder, 1987). Newer research is now looking at the possibility that humans may even be born with political predispositions, and that these dispositions are even partially heritable (Alford, Funk, & Hibbing, 2005; Bouchard, 2009; Fowler & Dawes, 2008; Hatemi et al., 2008; Hatemi et al., 2010; Lockyer, Hatemi & Hopcroft, 2018; Koenig & Bouchard, 2006). This research demonstrated that young adults do not enter the world apolitically but carry with them a predisposition toward a liberal or conservative ideology. While psychologists had long argued that biology shapes personality, heritability of politics is a relatively new finding.

It appears that personality plays a mediating role between biology and political views. Personality traits have also been shown to associate with political behavior, knowledge, and specific attitudes, such as, political participation, political interest, political engagement online, social justice activity like protesting, and political discussions (Brandstätter & Opp, 2014; Carney et al., 2008; Gerber et al., 2009; Gerber et

al., 2010; Gerber et al., 2011; Gerber et al., 2012; Mondak & Halperin, 2008; Quintelier & Theocharis, 2013). As such, much of the research into politics and personality have shown correlations between political orientation (a.k.a. political ideology) and personality factors (Madsen, 1985; McCrae & Costa, 1999). However, it is not clear how much variance personality traits account for in political measures as the differences are vast from measure to measure. One recent study indicated that as much as a third of the explained variance in their study on political protest was accounted for by personality traits. This is far from the only issue with comparing studies on personality and politics. The measures of political belief, behavior, attitude and more are far from standardized. As such, these different outcome measures may account for some of the variation in results. The use of student samples and lack of cultural diversity may also contribute to differences in outcomes.

Defining Political Orientation

"People's ideology can be seen as extending into every facet of their lives, including tastes in art, educational philosophies, humor, religion, occupation, leisure pursuits, child rearing, and of course politics. Political ideology then is the political manifestation of these deeper inclinations toward a variety of features of our existence, not merely a superficial and arbitrary summation and labeling of issue attitudes" (Smith et al., 2011, p. 378).

While there are many ways political attitudes are operationalized, the political science and psychology research in the last decade has established use of a two-dimensional configuration along the left-right ideological spectrum, often referred to as liberalism–conservatism in the United States (for a review, see Jost et al., 2003a, 2008,

2009). In the literature, this construct is now consistently and interchangeably referred to with either the term *political orientation* or *political ideology*.

The left–right orientation, while not without its flaws, has been used to classify political attitudes for much of modern or post-enlightenment history (e.g., Bobbio, 1996). Jost and his partners have identified two fundamental factors within the liberal and conservative spectrum that appear relatively constant and enduring. The first core issue area centers around attitudes tolerating inequality or resisting it, and the second, attitudes toward tradition and change (Jost et al., 2003a; 2003b). In general, those who are left-oriented or liberal tend to show more positive attitude toward minorities, are more likely to question the status quo, to have a tolerance of social reform, and to actively seek fairness in society. On the other hand, right-oriented or conservative people support the status quo, tradition, and social norms, they seek order and stability, and in contrast to those on the left, are willing to accept inequality in society (Jost et al., 2003a; 2003b; Kandler, Bleidorn, & Riemann, 2012; McClosky & Zaller, 1984).

There has been some debate over whether or not the majority of Americans are aware of where they stand on the bipolar left-right scale (Converse, 1964). But Jost reported in his "analyses of ANES data, [that] over two thirds of participants since 1972 and over three fourths since 1996 could and did place themselves on a bipolar liberalism–conservatism scale" (2006, p. 656). Additional studies have shown that given the choice, most participants will locate themselves on the political orientation scale even when other options such as "don't know" and "haven't thought much about it" are optional choices, and that when tested most are able to do this with a fair degree of accuracy (Evans, Heath, & Lalljee, 1996; Feldman, 2003; Knight, 1999; Noelle-Neumann, 1998).

Linking Personality to Political Orientation

Of all the associations between political orientation and Big Five personality traits, openness to new experience has shown the most consistent and well-established positive relationship with left-wing leaning orientation (Block & Block, 2006; Carney et al., 2008; DeYoung, Quilty, Peterson, & Gray, 2014; Ekehammar, Akrami, & Gylje, 2004; Furnham & Chamorro-Premuzic, 2004; Gerber et al., 2010; Gosling, Rentfrow, & Swann, 2003; Jost, 2006; Jost et al., 2003a, 2003b; Kruglanski et al., 2005; Mondak, 2010; Stenner, 2005; Van Hiel & Mervielde, 2004). Left-oriented people are "more openminded in their pursuit of creativity, novelty, and diversity" (Jost, 2006, p. 664). Conversely, conservatives have shown a consistent resistance to change (Jost et al., 2003a, 2003b), have been more xenophobic and prejudiced (Van Hiel, Pandelaere, & Duriez, 2004), more rigid, intolerant, inhibited, and closed-minded (Block & Block, 2006; Jost, 2006; Jost, Glaser, Kruglanski, & Sulloway, 2003a, 2003b; Kruglanski et al., 2005).

As openness is soundly connected with the left, study after study has shown a clear link between conscientiousness and conservatism (Carney et al., 2008; Ekehammar et al., 2004; Gosling, Rentfrow, & Swann, 2003; Jost, 2006; Rentfrow, Jost, Gosling, & Potter, 2009; Van Hiel, Mervielde, & De Fruyt, 2004). Those who lean to the right are more likely be orderly and organized (Jost et al., 2003a, 2003b), simple, decisive, and restrained (Block & Block, 2006; Kruglanski et al., 2005). When compared with the living spaces of liberals, conservatives' spaces were more likely to be neat, clean and organized (Carney et al., 2008).

Although the relationships between political orientation and the Big Five personality traits of openness and conscientiousness have been clearly established, the links between the left/right dimension and extraversion, agreeableness, and neuroticism are less substantial. Suggestive of a link between political orientation and extraversion, there have been a few recent studies that have shown liberals to be more expressive, enthusiastic, and excited, as compared with conservatives who were more restrained and inhibited (Block & Block, 2006; Jost et al., 2003a, 2003b). In terms of neuroticism, a few studies have shown a positive correlation between neuroticism and right-wing leaning, in that conservatives were more likely to be fearful and threatened, compared to liberals (Block & Block, 2006; Jost et al., 2003a, 2003b).

More studies have shown differences in agreeableness along the left-right spectrum, e.g. conservatives were more xenophobic, prejudiced, rigid, and intolerant (Block & Block, 2006; Jost et al., 2003a, 2003b; Van Hiel, Pandelaere, & Duriez, 2004). In contrast, liberals have scored higher on tendermindedness (Jost, 2006). A 2010 study by Hirsch et al. makes a compelling case for splitting the agreeableness trait into two factors: compassion and politeness. Hirsh et al., (2010) found that compassion was more associated with liberals who are concerned with equality and justice, and politeness was tied to conservatives who valued order, tradition, and stability.

Sibley, Osborne, and Duckitt (2012) conducted a meta-analysis (71,895 participants in 73 studies) and found only three of the five Big Five personality dimensions were reliably correlated with political orientation. This meta-analysis included a number of unpublished studies in the analysis, in addition to studies with a wide variety of samples and personality measures. Sibley et al. (2012) found a

significant, yet weak correlation between conscientiousness and conservatism and stronger correlation between openness and political liberalism. There was also a significant correlation between conservatism and neuroticism. However, extraversion and agreeableness were not correlated with political orientation. Worthy of note, this meta-analysis was unable to account for the two dimensions of agreeableness that Hirsh et al. (2010) studied, which might explain the lack of correlation found between political orientation and agreeableness across these studies.

Linking Political Orientation to Visual Preferences

In 2008, Carney et al., used an unusual method to uncover differences in liberals and conservatives by looking at the spaces they lived and worked in. The study took the researchers into the personal living spaces of 76 University of California-Berkeley students and the offices of 94 workers from across the U.S. By coding what they saw in those spaces, the researchers found that conservatives tended to decorate their spaces with more conventional items such as "sports paraphernalia, flags of various types, American flags in particular, and alcohol bottles and containers" and that their spaces were less stylish as compared to the liberals spaces (p. 832). Liberals spaces were more likely to be distinctive vs. ordinary, and more colorful. While this study begins to paint a picture of different visual tastes in left-leaning and right-leaning individuals it only does so peripherally.

One of the first studies identified that looked for correlations between political attitudes and art preferences was conducted in 1973 with 30 subjects (Wilson, Ausman, & Mathews). The researchers used an art expert to select five paintings each for four categories, simple representative, simple abstract, complex representative, and complex

abstract. Their findings showed a tendency for liberals to prefer the complex and abstract while the conservatives preferred the simple and representative and disliked the abstract. Of note, it was the complexity of the paintings that was the main difference between the liberal and conservative groups. While the sample was relatively small, these findings appear to have been supported in more recent studies (Carl, Richards, & Heath, 2018; Feist & Brady, 2004). Feist and Brady conducted a study, using a college student population, that compared preferences for realistic, ambiguous, and abstract paintings with different personality types and non-conformity. In looking at the measures for non-conformity they found that participants who were more tolerant to liberalism and drug use were more likely to prefer the abstract art (2004).

Although abundant political communication research studies the content of political messaging, researchers have, for the most part, disregarded the relationship between visuals and political attitudes. This is surprising considering how much importance the design world and journalists put on candidates' logo choices (e.g. Hurtado, 2019; McCauley, 2019; O'Kane, 2019; Wilson, 2019). One study connected attitudes toward Brexit with preferences for art (Carl, Richards, & Heath, 2018). In that study, researchers studied 3,607 members of the British public via an online survey conducted by a polling company and compared their preference for abstract versus realistic art. They found that participants who preferred the realistic paintings were much more likely to support Brexit (Brexit supporters were much more likely to identify as conservative). With the exception of a small number of newer studies, (Ahmed, 2013; Billard, 2016, 2018; Haenschen & Tamul, 2019), most research into typefaces and

political communication has looked at functional rather than aesthetic aspects of font choice (e.g., the impact of font type on ballot design by Kimball & Kropf, 2005).

CHAPTER 6

PURPOSE OF STUDY

Based on the reviewed literature, the following general model was proposed for how personality traits, political orientation, and visual preferences relate to one another, as well as how a person's expertise or aesthetic sensitivity, as indicated by their degree of centrality of visual aesthetics (the importance of visual aesthetics to them, see Bloch, Brunel, & Arnold, 2003), might moderate a person's preference for certain visuals over others. Figure 12 shows this general model.

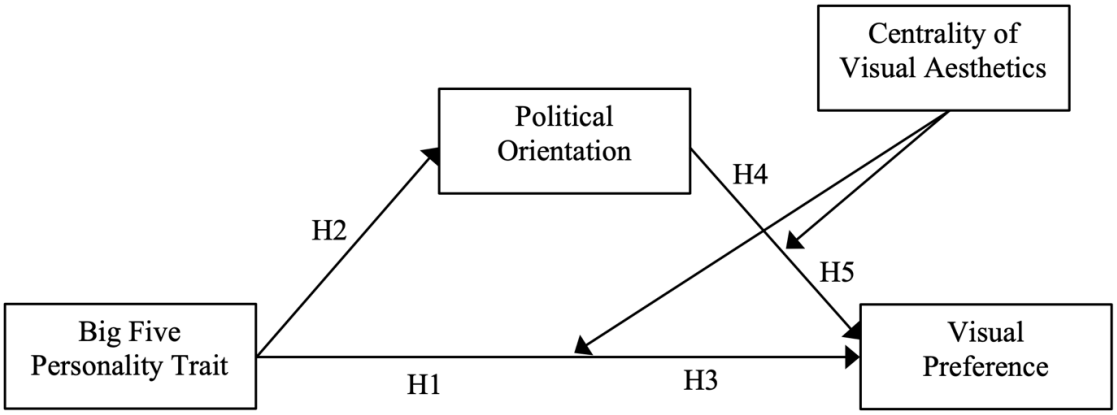


Figure 12. General model of relationship between personality, political orientation, and visual preference, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise).

Specific to the relationship with personality traits, it was hypothesized that higher scores on neuroticism would predict right-leaning political orientation (H2a) and

preferences for abstract visuals ($H1a_{R-A}$), based on the available literature. It is unclear how angular versus curved preferences would relate to scores on neuroticism, given the lack of research examining this relationship. However, given that people scoring high in neuroticism and people scoring high in extraversion showed a preference for pop art and abstract art (Furnham & Walker, 2001), it was hypothesized that higher scores on neuroticism would relate to an angular preference, similar to that of extraverts ($H1a_{C-A}$).

Higher scores on extraversion were hypothesized to predict preferences for abstract visuals ($H2b_{A-R}$), although one study (Machado et al., 2018) did find that extraverts preferred representational logos over other logos. Extraversion was hypothesized to predict preferences for angular lines ($H2b_{A-C}$) because of the evidence that extraverts preferred cubist art more than other personality types (Chamorro-Premuzic et al., 2009). Finally, extraversion was predicted to predict left-leaning political orientation (H2b).

Openness to new experience was expected to predict a preference for abstract rather than representative visuals ($H1c_{A-R}$) and for curved rather than angular visuals ($H1c_{A-C}$). Openness to experience was also expected to predict left-leaning rather than right-leaning political orientation (H2c).

Agreeableness was expected to predict a preference for representative rather than abstract visuals ($H1d_{A-R}$). It was unclear how agreeableness would relate to preferences for angular or curved visuals, although I did predict a preference for curved visuals ($H1d_{A-C}$), given the link between agreeableness and both a low preference for pop art (Furnham & Walker, 2001) and a greater liking of representative art (Furnham & Avison,

1997), which suggested an opposing preference to those who have a preference for pop art (Furnham & Walker, 2001).

Conscientiousness was expected to predict preferences for representative ($H1e_{A\text{-}R}$) and angular ($H1e_{A\text{-}C}$) visuals, given the propensity for people who score high on this trait to like order and dependability. Conscientiousness was also expected to predict preferences for right-leaning political orientation (H2e).

With regard to political orientation and visual preference, left-leaning orientation was hypothesized to predict abstract rather than representative preferences ($H4_{A\text{-}R}$) and curved rather than angular preferences ($H4_{A\text{-}C}$). For the latter prediction, curved preferences were predicted to relate more to left-leaning than right-leaning orientations because of the non-conformist preferences of liberals, in addition to the preferences for "straightforward" brands and negative perceptions of feminism by conservatives (Feist & Brady, 2004). Recall that curved lines are associated with dynamism, femininity, and irregularity (see Figure 6).

Finally, with regard to centrality of visual aesthetics, recall that people with greater expertise in art tend to appreciate more unconventional or abstract art, compared to less expert people (see Jacobsen, 2006). Therefore, those who have a higher degree of centrality of visual aesthetics, in other words, those who assign a great deal of importance to the look of things, might have a greater preference for abstract rather than representative visuals, as well as more curved rather than angular visuals, regardless of their personality or political orientation. Thus, the nature of the predicted moderation by centrality is that the higher the degree of centrality, the more likely this degree of centrality will override the influence of personality or political orientation in predicting

visual preference. H3 reflects this moderation with respect to personality and H5 reflects this moderation with respect to political orientation.

With respect to H3, centrality was expected to intensify the relationship between neuroticism and the preference for abstract visuals ($H3a_{A\text{-}R}$), but centrality was expected to weaken the relationship between neuroticism and the preference for angular visuals ($H3a_{A\text{-}C}$). A similar pattern was expected for extraversion with regard to preferences for abstract ($H3b_{A\text{-}R}$) and angular ($H3b_{A\text{-}C}$) visuals. Centrality was expected to intensify the positive association between openness to experience and a preference for abstract visuals ($H3c_{A\text{-}R}$) and for curves ($H3c_{A\text{-}C}$). Centrality was expected to weaken the relationship between agreeableness and the preference for representative visuals ($H3d_{A\text{-}R}$) yet intensify the relationship between agreeableness and the preference for curved visuals ($H3d_{A\text{-}C}$). Centrality was predicted to weaken the association between conscientiousness and the preference for representative ($H3e_{A\text{-}R}$) and angular ($H3e_{A\text{-}C}$) visuals.

In terms of H5, centrality was expected to intensify the relationship between left-leaning political orientation and preferences for abstract ($H5_{A\text{-}R}$) and curved ($H5_{A\text{-}C}$) visuals. It should be noted that, given the overall tendency noted in the literature for people to prefer curved over angular forms, it is probably more accurate to talk about a preference for angular visuals as being less of a strong preference for curved visuals. In other words, when I discuss preferences for angular visuals, my intent is to indicate a greater tolerance for angular forms. Thus, the hypotheses laid out above should be interpreted in terms of the degree of strength for curved forms.

Finally, H6 pertains to the indirect relationship between the personality traits and visual preference, mediated by political orientation and moderated by CVPA. It was

predicted that those higher in neuroticism, extraversion, and openness will have a preference for more abstract visuals as mediated by their political orientation (liberals preferring abstract visuals and conservatives preferring representative visuals) and strengthened by higher CVPA ($H6a_{A\text{-}R}$, $H6b_{A\text{-}R}$, and $H6c_{A\text{-}R}$), while those higher in agreeableness and conscientiousness will prefer more representative visuals, which will be weakened by CVPA and mediated by their political orientation ($H6d_{A\text{-}R}$, and $H6e_{A\text{-}R}$). Concerning preferences to angles and curves it was predicted that respondents high in neuroticism, extraversion, and conscientiousness would prefer angular visuals and that preference would be weakened by higher CVPA ($H6a_{A\text{-}C}$, $H6b_{A\text{-}C}$, and $H6e_{A\text{-}C}$) and vice versa, those higher in openness and agreeableness would prefer curved visuals, which would be strengthened by CVPA all mediated by the respondents political orientation – with liberals preferring curves and conservatives preferring angles ($H6c_{A\text{-}C}$, and $H6d_{A\text{-}C}$).

CHAPTER 7

METHOD

Overview

A survey was conducted to explore relationships between visual aesthetic preferences, personality traits, and political orientation. Two key visual aesthetic dimensions, representing aspects of visual aesthetic preference were examined. The first dimension is the level of abstraction, comparing preferences for abstract visuals vs. representative visuals. The second dimension is the level of curvature or linearity, examined in this study as a preference for curved design elements vs. angular design elements. Previous research has investigated these variables with fine art materials (Furnham & Chamorro-Premuzic, 2004; Rawlings, 2003; Barron, 1952; Furnham & Walker, 2001a, 2001b; Furnham & Avison, 1997; Furnham & Rao, 2002). However, none of these studies have looked at these dimensions with graphic design materials. Therefore, this study adds to the existing literature; first, by examining preferences within these two dimensions in both the fine art and graphic design domains; and second, by using a survey method to test a new graphic design visual stimulus-based instrument. This new graphic design instrument was correlated with existing fine art instruments assessing preferences for the two dimensions. Responses to these visual aesthetic preference measures were correlated with the participants' self-reports of their personality characteristics, as well as their political orientation.

Participants

A convenience sample of 1,008 participants (see Table 1 for participant descriptives) was recruited via MTurk from January 13 to January 16, 2020, with requirements that participants be 18 years or older and located in the United States (recruitment was conducted after approval by the University of North Carolina's Internal Review Board, the IRB). Although 1,008 surveys were collected, 32 participants' data were eliminated for lack of attention because they missed one or more of the attention checks and for missing data for a final total of *N*=976.

By using a provider like MTurk rather than using a university student participant pool, I was able to recruit a demographically broader sample. This greater diversity is vital for the purposes of this study, as several key demographic characteristics such as gender, age, or formal education level, are known correlates with some personality and political variables, for example age and conservatism (e.g., Riemann, Grubich, Hempel, Mergl, & Richter, 1993; Ruffman et al., 2016). Therefore, these demographics had the potential to moderate the relationships between personality and/or political orientation and visual preferences.

Participants were limited to the United States to avoid cultural variability that could have influenced perceptions of the visuals shown. All participants were required to have a hit approval rate above 95%. A rejection rate of higher than 5% indicates that other MTurk requesters consistently rejected a worker, indicating lower overall work quality. Participants were compensated $2 for participation in the survey (*M* = 13.1 minutes)[1]. Participants were required to be 18 years or older, speak English, and live in

[1] Funding for this study was provided by Dr. Francesca Dillman Carpentier's professorship.

the United States in order to meet the needs for reading and giving informed consent online, as well as to reduce possible confounds by being unfamiliar with the symbols or words used in the visual stimuli, as well as reducing cultural variability—another potential influence on aesthetic preference.

Items within measures were also slightly altered to avoid overly repetitive wording to help participants avoid mistakes or attention lapses due to the repetition. Three attention checks were included within the measures. Of the 976 participants (100%) got all three checks correct. When possible, items within measures were presented in a randomized order to avoid primacy/recency effects across the sample. It should be noted, however, that people who commonly take surveys on MTurk (a.k.a. Turkers) have become expert survey takers. They are aware of commonly used questions, including those used for attention checks (Marder & Fritz, 2015). Slight alterations in wording can prevent possible mistakes and attention lapses that might result from the speed with which these experts might complete the survey, given their familiarity with survey instruments.

Amazon's MTurk population overrepresents women and Whites (Berinsky, Huber & Lenz, 2012). In a recent MTurk survey with a similar 1000 participant sample (Zenner, 2019), 61% were women and 68% were White (10% reported as Hispanic, 9% as Black, and 6% as Asian or Pacific Islander). The U.S. Census Bureau in 2016 reported the population in the U.S. as 51% women and 61% White. The same survey also found that half of the participants had either a Bachelor's (37%) or Associate's degree (13%) and nearly 50% of the participants reported a household income between $40K and $100K. The majority of those surveyed were employed full-time (40+ hours a week), married,

owned the home they lived in, lived in a suburban area, and were 38 years old, on average. More than a third (38%) identified as Democrats, and 26% reported being Republican. Out of those participants who classified themselves as Independent or Something Else (N = 344), 63% said they had a leaning toward the Democratic Party (Zenner, 2019).

In the present survey, of the total participants (N=976) 58% identified as male, 72% identified White (6.1% reported as Asian, 9.4% as Black, 5.2% as Hispanic, and 5.7% as Mixed). We also found that half of the participants were college or technical/vocational school graduates (62.7%) and nearly 63.4% of the participants reported a household income over $40K.

Procedure

Participants, through MTurk's recruitment system, were told they would be answering questions about their aesthetic preferences via a survey. Upon arriving at the first page of the survey, participants were given informed consent information, including a general overview of what to expect, how long the survey should take to complete, and a reminder of how the $2 compensation for completion of the survey would be delivered. Participants were asked to give consent digitally, as well as to acknowledge that they are 18 years or older, English speakers, and that they currently reside in the United States, before being allowed to proceed to the survey items. The survey was then introduced.

The survey consisted of five sections (see Appendix A for survey items). The first section included an assessment of visual preferences, broken into two parts. The first part asked participants to indicate their preference for visuals that have a more representative style or a more abstract style, first, by selecting their preferences within a series of fine

art images and, second, by selecting their preferences within a series of logos. The second part assessed preferences for more angular elements versus more curved elements by selecting preferences among shapes, followed by selections among images of typography (see Appendix A for stimuli images). The second section included a measure of centrality of visual product aesthetics (CVPA), the third measures of personality traits, the fourth section measures of personality traits, and the last section included demographic measures.

Upon completing the survey, participants were provided with additional information about the purpose of the survey and given contact information if they would like to contact the researcher or the university IRB with any questions or concerns. Participants were then provided with an MTurk survey completion code that they needed to enter into the Amazon MTurk window for payment. Finally, participants were thanked and exited from the survey.

Pretest

All visual materials were pre-tested using university students (N=32) to ensure that all items in the adapted fine art and newly generated graphic design sections (logos and typography) of the questionnaire clearly reflected the abstract/representative and angular/curved dimensions. For the test, students were asked to sort 30 items from each category (art, logos, typography) into either abstract, representative, or neither for the fine art images and logos. For the typography they sorted the 30 samples into either angular, curved, or neither. All of the feedback was compiled and the items that scored highest for abstract, representative, angular, and curved were used for the final survey.

Additional pre-testing was done prior to executing the survey on MTurk. Testers

looked for issues in the survey and noted that selecting image choices in the visual preferences section was quite different on a cell phone versus a desktop or laptop computer. Because of this, two versions of the visual preferences section were created, one for those who indicated they were taking the survey on a phone or tablet and one for those taking the survey on a desktop or laptop. Otherwise, all other sections were identical. See Appendix A for the survey.

Measures

Visual preferences. Prior to beginning the visual preferences section of the survey participants were asked to indicate the device they were taking the survey on either a laptop/desktop, or a cell phone/tablet. Depending on this response, participants were given slightly different styles of questions that pre-testers indicated were easier to use on that particular device. Otherwise, all of the images appeared identically.

Participants' visual preferences for abstract vs. representative and for curved vs. angular visuals were assessed across both the fine art and graphic design domains as they saw six pairs of fine art images and six pairs of logos (see Appendix A for images). In each pair, one image exemplified greater realistic and the other image exemplified greater abstract representation. The pairs were similar in other aspects, such as color palette and subject. Participants saw each pair one at a time and indicated which of the two images they preferred. The curved-angular dimension was conducted in a similar fashion, with curved vs. angular shapes and with curved vs. angular type (fonts). Specifically, one of the images per pair featured curved lines/no curves and rounded shapes and the other image in the pair featured straighter lines/hard angles/angular shapes.

Randomization was used across and within the fine art, logos, shapes, and

typography images; in other words, the order in which participants viewed either the fine art, logos, shapes, or typography was randomized, the order of the pairs within each category was randomized, and then the order that each item within the pairs was presented was randomized. Images of fine art (paintings), as well as the procedure using pairs, were adapted from previous research examining visual preferences for art (Cleridou & Furnham, 2014), while the shapes were pulled from a study on the appeal of curves (Cotter et al., 2017).

Abstract/representative dimension. Preference for abstract vs. representative was quantified by assigning a code of -1 for the abstract images and a code of +1 for the representative images. Participants scores were added within the fine art selections and within the logo selections (range between +6 and -6), with higher scores indicating a stronger preference for representative visuals. Fine art (M = 2.49, SD = 3.03) and logo scores (M = 1.93, SD = 3.19) were also correlated and showed that participants exhibited similar preferences across the abstract/representative domain, , $r = .257$, $p = \leq .001$ (see Table 4 for correlations of all measured variables).

Overall, participants preferred the representative art and representative logos to the abstract art and logos (see Table 2 for frequencies of the images). There was a negative correlation between abstract/representative scores (M = 4.42, SD = 4.93), education (M = 3.67, SD = .878) , $r = -.089$, $p = \leq .001$, HHI (M = 3.40 SD = 1.62) , $r = -.063$, $p = \leq .001$, political orientation (M = .02, SD = .78) , $r = -.151$, $p = \leq .001$, neuroticism (M = 2.49 SD = .96), $r = -.069$, $p = \leq .05$, and a positive correlation with conscientiousness (M = 3.83, SD = .79), $r = .108$, $p = \leq .001$.

Angular/curved dimension. The same procedure used for abstract/representative

images was conducted to evaluate preferences for the angular/curved dimension. Preference for angular vs. curved visuals was quantified by assigning a code of -1 for the angular images and a code of +1 for the curved images, with higher scores indicating a stronger preference for curved visuals. Shape (M = 1.55, SD = 3.51) and typography scores (M = -.10, SD = 2.63) were correlated and showed that participants exhibited similar preferences across the angular/curved domain, $r = .226$, $p = \leq .001$ (see Table 4 for correlations).

Overall, participants preferred the curved shapes and curved typography to the angular shapes and typography (see Table 2 for frequencies of images), although the typography images were the most inconsistently rated of the four image categories. There was a positive correlation between angular/curvedscores (M = 1.45, SD = 4.84), age (M = 3.67, SD = .878) , $r = .081$, $p = \leq .05$, agreeableness (M = 3.81, SD = .69) , $r = .105$, $p = \leq .001$, conscientiousness (M = 3.83, SD = .79) , $r = .074$, $p = \leq .05$ and a negative correlation between angular/curved scores and neuroticism (M = 2.49 SD = .96) , $r = -.081$, $p = \leq .05$.

Visual aesthetics centrality. Centrality of visual aesthetics, defined as the level of significance that visual aesthetics hold for consumers in how they feel about their products, has been understood as a proxy for viewers' expertise, which predicts their appreciation for unconventional art. This study used the full Centrality of Visual Product Aesthetics (CVPA) scale by Block, Brunel, & Arnold (2003). The CVPA consists of 11 items that ask participants to rate their agreement with statements, such as "Owning products that have superior designs makes me feel good about myself" and "I see things in a product's design that other people tend to pass over," on a 5-point scale ranging from

1 = Strongly disagree to 5 = Strongly agree. Higher scores indicated increased importance of visual aesthetics of a product when considering product ownership or purchase decisions. The items were summed and averaged (*M*=3.70, SD=.72, Cronbach's α=0.89).

Personality traits. The 50-item IPIP-NEO (International Personality Item Pool – Neuroticism, Extraversion & Openness) measure is the short-form version of the publicly available 100-item IPIP-NEO measure (Goldberg, 1992) developed as an alternate, valid way of assessing the Big Five personality characteristics measured in the NEO PI-R, or NEO Personality Inventory-Revised by Costa and McCrae (2008). This IPIP inventory has been extensively used and its reliability confirmed as a good predictor of personality dimensions (Donnellan, Oswald, Baird, & Lucas, 2006; Ehrhart, Roesch, Ehrhart, & Kilian, 2008).

The Big Five are dimensions, or factors, of personality that are further defined by more specific traits that, together, create a taxonomy of personality. The five factors are neuroticism (tense, moody, anxious), extraversion (talkative, energetic, assertive), openness to experience (wide interests, imaginative, insightful), agreeableness (sympathetic, kind, affectionate), and conscientiousness (organized, thorough). Participants were asked to indicate how accurately, on a 5-point scale from 1 "Very Inaccurate" to 5 "Very Accurate" they agree that each of 50 statements (ex. I am the life of the party) describes them. A total of 10 statements each pertained to each one of the big five personality factors. Higher scores indicated a greater self-attribution of the respective personality dimension. The items were summed and averaged for each personality dimension: neuroticism (*M*=2.49, SD=.96, Cronbach's α=0.91), extraversion

(*M*=3.02, SD=.93, Cronbach's α=0.90), openness (*M*=3.85, SD=.73, Cronbach's α=0.81), agreeableness (*M*=3.81, SD=.69, Cronbach's α=0.84), conscientiousness (*M*=3.83, SD=.79, Cronbach's α=0.89).

Political orientation. To gauge political orientation, participants were evaluated with multiple measures, namely liberalism, party preference, and political leaning within three areas, social-cultural, economic, and law and order (adapted from Xu & Peterson, 2017). In this study, political orientation was assessed using self-reported items, as has become the standard of practice in political science literature (e.g., Knight, 1999). Although shorter measures are sometimes affected by psychometric limitations, they are also often optimal for evaluating constructs that are generally well understood by laypeople (e.g., Burisch, 1997; Gosling et al., 2003).

Liberalism was measured using the 10-item Liberalism scale from the International Personality Item Pool, or IPIP (Goldberg, 1999). This scale consisted of items asking participants to rate their agreement with political value statements, such as "I tend to vote for liberal political candidates" and "I believe that there is no absolute right or wrong," on a 5-point Likert scale ranging from 1 "Strongly disagree" to 5 "Strongly agree". Higher scores indicated a higher degree of liberalism. The items were summed and averaged (*M*=3.2, SD=.88, Cronbach's α=0.85).

Participants were also asked to rate their preference for each of the two primary American political parties, Democratic (*N=975, M*=2.92, SD=1.54) and Republican (*N=976, M*=2.13, SD=1.4), on a 5-point scale. One participant skipped the Democratic party question but answered all others. With three final questions, participants were asked to rate, on a scale from 1 = "Very liberal" to 7 = "Very conservative," where they would

place themselves politically in terms of (1) social and cultural issues (e.g., abortion, separation of church and state, and affirmative action) (*N=976, M*=3.31, SD=1.93), in terms of (2) economic issues (e.g., taxation, welfare, privatization of social security) (*N=976, M*=3.62, SD=1.94), and (3) law and order issues (e.g. immigration, police use of force, drug use sentencing) (*N=976, M*=3.49, SD=1.88). These three items were adapted from prior work by Jost (2006) and Carney et al. (2008), who used these items as separate measures of political orientation.

By using multiple measures, I was able to evaluate different aspects contributing to an individual's political orientation. These three measures of political orientation (liberalism political party preferences, and political ideology) were all highly correlated (see Table 4). I standardized each measure (into z-scores) and then averaged the standardized measures into an overall composite indicator of political orientation (scores for the Republican Party preference, Social/Cultural, Economic, and Law & Order measures were reverse-coded prior to aggregation). The items were summed and averaged (*M*=.005, SD=4.76, Cronbach's α=0.88) into one political orientation score.

CHAPTER 8

RESULTS

A total of 10 moderated mediation analyses were performed to test the relationships hypothesized in the general model of variables shown above in Figure 12. For each of the two types of visual preference (first for the abstract/representative dimension and second for the angular/curved dimension), each of the Big Five personality traits was entered as the individual predictor (X) with political orientation set as the mediating variable.

Each moderated mediation analysis consisted of two regression analyses. The first analysis regressed the mediator (political orientation) onto the selected predictor (one of the Big Five traits), in address of H2. The second regression analysis regressed the selected type of visual preference (abstract/representative dimension or angular/curved dimension) onto both the mediator (political orientation), addressing H4, and the primary predictor (the selected Big Five trait), addressing H1. In all moderated mediation analyses, the CVPA (centrality of visual product aesthetics) score was entered as the moderating variable (W), moderating both the relationship between the mediator and the visual preference dimension, addressing H5, and the relationship between the primary predictor and the visual preference dimension, addressing H3. Thus, in the second regression analysis, the selected type of visual preference was also regressed onto interactions between political orientation and the CVPA score (H5) and between the

entered personality trait and the CVPA score (H3).

Moderated mediation analyses were conducted using Model 15 of Hayes' PROCESS macro for SPSS. Conditional direct and indirect effects were estimated within the macro using bias-corrected 95% Confidence Intervals based on 50,000 bootstrap samples (Hayes, 2013). The index of moderated mediation derived from the bootstrapping method, which estimates the magnitude and direction of the indirect relationship between the primary predictor and visual preference (based on multiplying the regression coefficient testing H2 and the regression coefficient testing H5), was used as the test for H6. If the 95% Confidence Interval around the index of moderated mediation did not include zero, then H6 was interpreted to be supported.

Predicting the Abstract/Representative Dimension

Neuroticism. In the first moderated mediation analysis predicting visual preference based on the abstract/representative dimension, neuroticism was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between neuroticism and the visual preference. The first regression predicting political orientation was statistically significant, $R^2 = .02$, $F(1,974) = 22.83$, $p < .001$. Neuroticism had a significant positive relationship with political orientation, suggesting higher scores on neuroticism predicted more left-leaning political orientation, $B = 0.12$, $SE\ B = .03$, $p < .001$. However, neuroticism was expected to predict right-leaning political orientation. H2 was not supported for neuroticism.

The second regression predicting the abstract/representative dimension was statistically significant, $R^2 = .03$, $F(5,970) = 5.36$, $p < .001$. However, the individual

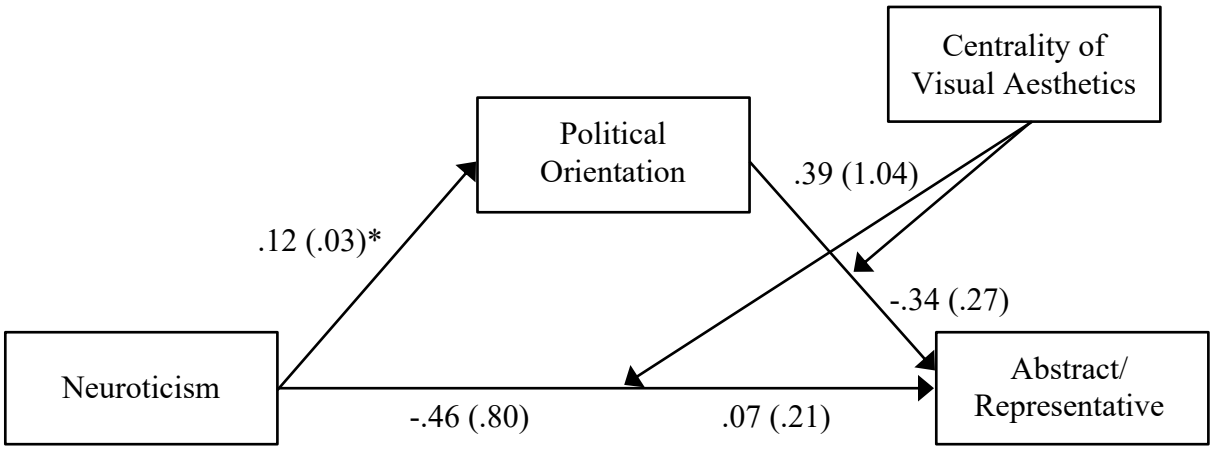
terms within this second regression did not reach statistical significance. Political orientation did not have a significant relationship with the abstract/representative dimension, B = .39, $SE\ B$ = 1.04, p = .71. Thus, H4 was not supported. Neuroticism did not have a significant relationship with the abstract/ representative dimension, B = -.46, $SE\ B$ = .80, p = .56. Thus, H1 was not supported. CVPA did not have a significant relationship with the abstract/representative dimension (there was not a specific hypothesis about this relationship), B = -.01, $SE\ B$ = .56, p = .98. The interaction between political orientation and CVPA did not significantly predict the abstract/representative dimension, B = -.34, $SE\ B$ = .27, p = .21. Thus, H5 was not supported. The interaction between CVPA and neuroticism also did not significantly predict the abstract/representative dimension, B = .07, $SE\ B$ = .21, p = .76. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, B = -.04, $SE\ B$ = .04, CI_{95} = -.12 to .02. Therefore, H6 was not supported. Given the overall index of moderated mediation was not estimated to be significant, the following additional results should be received with caution and are reported in efforts to provide a thorough reporting of findings.

When examining the conditional indirect effects, neuroticism was estimated to have an indirect negative relationship with the abstract/representative dimension when CVPA was evaluated at -1 standard deviation below its mean, B = -.08, $SE\ B$ = .04, CI_{95} = -.18 to -.05. Neuroticism was also estimated to have a negative indirect relationship with the abstract/representative dimension when CVPA was set to its mean, B = -.11, $SE\ B$ = .03, CI_{95} = -.16 to -.01. Neuroticism was additionally estimated to

have a negative indirect relationship with the abstract/representative dimension when CVPA was evaluated at +1 standard deviation above its mean, B = -.14, $SE\ B$ = .05, CI_{95} = -.24 to -.06. Although no evidence for moderated mediation was found, the conditional indirect effects suggest a non-moderated mediating relationship existed. People who scored higher on the neuroticism score were likely to lean toward liberal political views, which in turn was likely to result in a preference for abstract rather than representative design. Again, however, these findings should be interpreted with caution, as neither the index of moderated mediation nor the direct path from political orientation to visual preference was statistically significant.

As noted above (H1), the direct effect of neuroticism on the abstract/representative dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between neuroticism and visual preference, there was no relationship estimated between neuroticism and the abstract/representative dimension at low values of CVPA, B = -.26, $SE\ B$ = .22, CI_{95} = - .71 to .17. No relationship was estimated between neuroticism and the abstract/representative dimension at the mean value of CVPA, B = -.22, $SE\ B$= .17, CI_{95} = -.54 to .11. The same finding was noted at high values of CVPA, B = -.17, $SE\ B$ = .23, CI_{95} = -.62 to .28. These conditional direct effect estimates further underscore the lack of support for H3, which was also noted by the non-significant interaction between neuroticism and CVPA reported above.



Index of Moderated Mediation B = -.04, SE = .0, CI_{95} = -.12 to .02.

Figure 13. Model of relationship between neuroticism, political orientation, and the abstract/representative dimension*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*

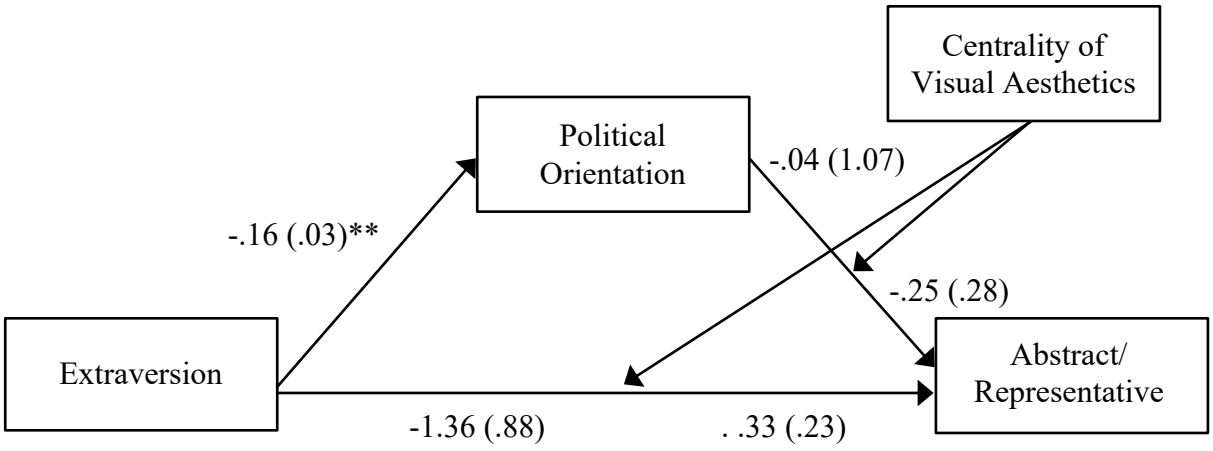
Extraversion. In the next moderated mediation analysis predicting visual preference based on the abstract/representative dimension, extraversion was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between extraversion and the visual preference. The first regression predicting political orientation was statistically significant, R^2 = .03, $F(1,974) = 34.25$, $p < .001$. Extraversion had a significant negative relationship with political orientation, suggesting higher scores on extraversion predicted more right-leaning political orientation, B = -0.16, $SE\ B$ = .03, $p < .001$. Extraversion was expected to predict left-leaning political orientation. H2 was not supported for extraversion.

The second regression predicting the abstract/representative dimension was statistically significant, R^2 = .03, $F(5,970) = 5.52$, $p < .001$. However, the individual terms within this second regression did not reach statistical significance. Political

orientation did not have a significant relationship with the abstract/representative dimension, B = .04, $SE\ B$ = 1.07, p = .97. Thus, H4 was not supported. Extraversion did not have a significant relationship with the abstract/ representative dimension, B = -1.36, $SE\ B$ = .88, p = .12. Thus, H1 was not supported. CVPA did not have a significant relationship with the abstract/representative dimension (there was not a specific hypothesis about this relationship), B = -.71, $SE\ B$ = .70, p = .31. The interaction between political orientation and CVPA did not significantly predict the abstract/representative dimension, B = -.25, $SE\ B$ = .28, p = .38. Thus, H5 was not supported. The interaction between CVPA and extraversion also did not significantly predict the abstract/representative dimension, B = .33, $SE\ B$ = .23, p = .15. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, B = .04, $SE\ B$ = .04, CI_{95} = -.04 to .13. Therefore, H6 was not supported. When examining the conditional indirect effects, extraversion was estimated to have an indirect positive relationship with the abstract/representative dimension when CVPA was evaluated at -1 standard deviation below its mean, B = .12, $SE\ B$ = .05, CI_{95} = .03 to .22. Extraversion was also estimated to have a positive indirect relationship with the abstract/representative dimension when CVPA was set to its mean, B = .15, $SE\ B$ = .04, CI_{95} = .07 to .23. Extraversion was additionally estimated to have a positive indirect relationship with the abstract/representative dimension when CVPA was evaluated at +1 standard deviation above its mean, B = .18, $SE\ B$ = .05, CI_{95} = .08 to .29. Taken together, these conditional indirect effects suggest a non-moderated mediation, wherein people who are more extraverted are likely to lean conservative, which in turn predicts a preference for representative rather than abstract visuals. This finding exists despite a non-significant link between political orientation and visual preference as noted in the second regression.

As noted above (H1), the direct effect of extraversion on the abstract/representative dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between extraversion and visual preference, there was no relationship estimated between extraversion and the abstract/representative dimension at low values of CVPA, *B* = -.38, *SE B* = .25, CI_{95} = - .87 to .11. No relationship was estimated between extraversion and the abstract/representative dimension at the mean value of CVPA, *B* = -.15, *SE B*= .18, CI_{95} = -.50 to .20. The same finding was noted at high values of CVPA, *B* = .09, *SE B* = .24, CI_{95} = -.38 to .55. These conditional direct effect estimates further underscore the lack of support for H3, which was also noted by the non-significant interaction between extraversion and CVPA reported above.



Index of Moderated Mediation B = -.04, SE = .04, CI_{95} = -.04 to .13.

*Figure 14.*Model of relationship between extraversion, political orientation, and the abstract/representative dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

Openness. In the next analysis, openness was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation

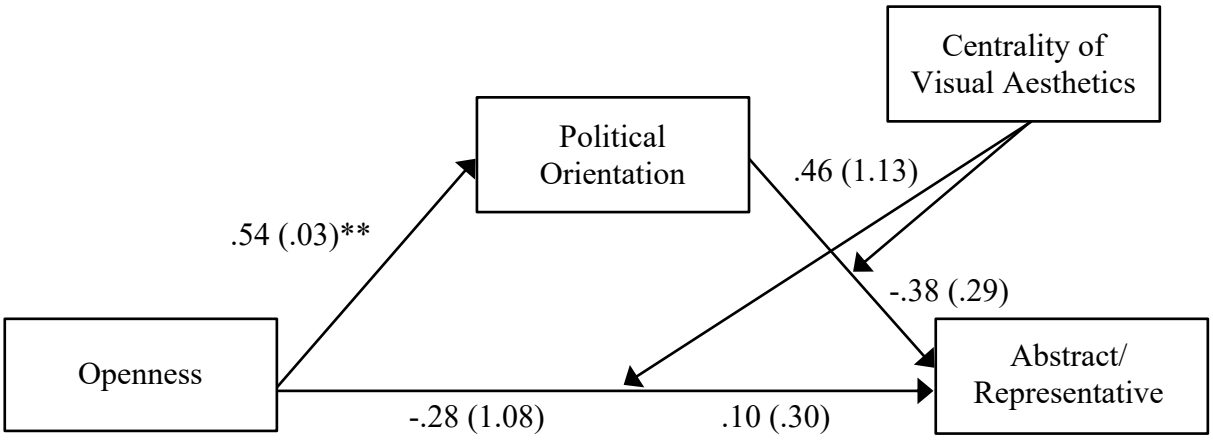
and the visual preference and between openness and the visual preference. The first regression predicting political orientation was statistically significant, $R^2 = .25$, $F(1,974) = 325.35$, $p < .001$. Openness had a significant positive relationship with political orientation, suggesting higher scores on openness predicted more left-leaning political orientation, $B = .54$, $SE\ B = .03$, $p < .001$. Openness was expected to predict left-leaning political orientation. H2 was supported for openness.

The second regression predicting the abstract/representative dimension was statistically significant, $R^2 = .03$, $F(5,970) = 5.02$, $p < .001$. However, the individual terms within this second regression did not reach statistical significance. Political orientation did not have a significant relationship with the abstract/representative dimension, $B = .46$, $SE\ B = 1.13$, $p = .69$. Thus, H4 was not supported. Openness did not have a significant relationship with the abstract/ representative dimension, $B = -.28$, $SE\ B = 1.08$, $p = .80$. Thus, H1 was not supported. CVPA did not have a significant relationship with the abstract/representative dimension (there was not a specific hypothesis about this relationship), $B = -.20$, $SE\ B = 1.14$, $p = .86$. The interaction between political orientation and CVPA did not significantly predict the abstract/representative dimension, $B = -.38$, $SE\ B = .29$, $p = .19$. Thus, H5 was not supported. The interaction between CVPA and openness also did not significantly predict the abstract/representative dimension, $B = .10$, $SE\ B = .30$, $p = .74$. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, $B = -.21$, $SE\ B = .16$, $CI_{95} = -.52$ to .11. Therefore, H6 was not supported. When examining the conditional indirect effects, openness was estimated to have an indirect negative relationship with the abstract/representative dimension when CVPA was evaluated at -1 standard deviation below its mean, $B = -.37$, $SE\ B = .18$, $CI_{95} = -.72$ to -.03. Openness was also estimated to have a negative indirect relationship with the abstract/representative dimension when CVPA was set to its mean, $B = -.52$, $SE\ B = .13$,

CI_{95} = -.78 to -.27. Openness was additionally estimated to have a negative indirect relationship with the abstract/representative dimension when CVPA was evaluated at +1 standard deviation above its mean, *B* = -.67, *SE B* = .17, CI_{95} = -1.01 to -.34. These findings would be supportive of both H3 and H5 (intensifying and toward an abstract preference), had the CI_{95} of the index of moderated mediation not included zero. Instead, the findings support a mediated relationship between openness and abstract preferences, as hypothesized, without any moderation of the mediated relationship. The more a person is open to new experiences, the more liberal the person is likely to be politically, and the more the person will prefer abstract rather than representative art.

As noted above (H1), the direct effect of openness on the abstract/representative dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between openness and visual preference, there was no relationship estimated between openness and the abstract/representative dimension at low values of CVPA, *B* = .01, *SE B* = .32, CI_{95} = - .61 to .64. No relationship was estimated between openness and the abstract/representative dimension at the mean value of CVPA, *B* = .09, *SE B*= .28, CI_{95} = -.47 to .64. The same finding was noted at high values of CVPA, *B* = .16, *SE B* = .39, CI_{95} = -.60 to .92. These conditional direct effect estimates further underscore the lack of support for H3, which was also noted by the non-significant interaction between openness and CVPA reported above.



Index of Moderated Mediation B = -.21, SE = .16, CI_{95} = -5.2 to .11.

Figure 15. Model of relationship between openness, political orientation, and the abstract/representative dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

Agreeableness. Next, agreeableness was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between agreeableness and the visual preference. The first regression predicting political orientation was not statistically significant, R^2 = .002, $F(1,974) = 2.23$, $p = .14$. Agreeableness had no relationship with political orientation, $B = .05$, $SE\ B = .04$, $p = .14$. Agreeableness was expected to predict left-leaning political orientation. H2 was not supported for agreeableness.

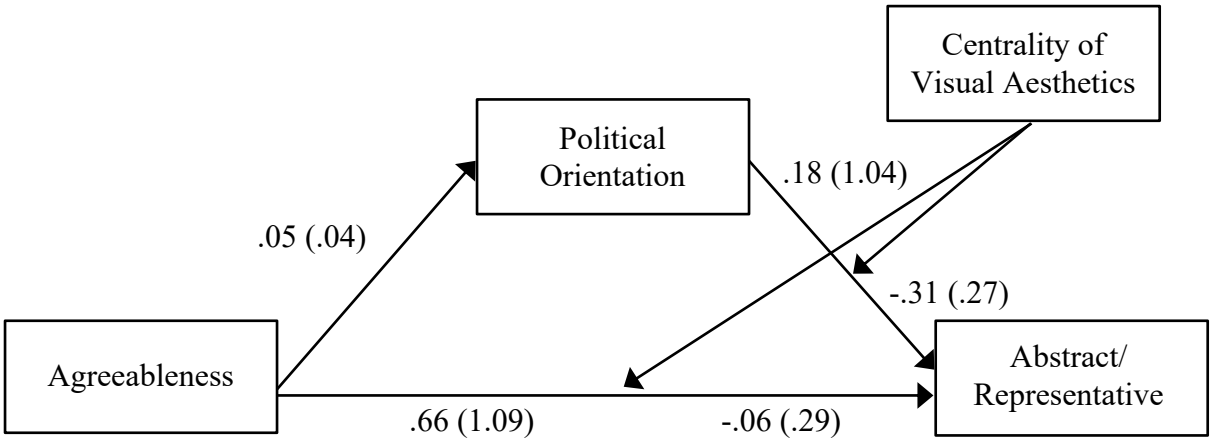
The second regression predicting the abstract/representative dimension was statistically significant, $R^2 = .03$, $F(5,970) = 5.78$, $p < .001$. However, the individual terms within this second regression did not reach statistical significance. Political orientation did not have a significant relationship with the abstract/representative dimension, $B = .18$, $SE\ B = 1.04$, $p = .86$. Thus, H4 was not supported. Agreeableness did not have a significant relationship with the abstract/ representative dimension, $B = .66$, $SE\ B = 1.09$, $p = .54$. Thus, H1 was not supported. CVPA did not have a significant

relationship with the abstract/representative dimension (there was not a specific hypothesis about this relationship), B = .29, $SE\ B$ = 1.13, p = .80. The interaction between political orientation and CVPA did not significantly predict the abstract/representative dimension, B = -.31, $SE\ B$ = .27, p = .26. Thus, H5 was not supported. The interaction between CVPA and agreeableness also did not significantly predict the abstract/representative dimension, B = -.06, $SE\ B$ = .29, p = .85. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, B = -.02, $SE\ B$ = .02, CI_{95} = -.07 to .02. Therefore, H6 was not supported. When examining the conditional indirect effects, agreeableness had no relationship with the abstract/representative dimension when CVPA was evaluated at -1 standard deviation below its mean, B = -.04, $SE\ B$ = .03, CI_{95} = -.12 to .01. Agreeableness also had no relationship with the abstract/representative dimension when CVPA was set to its mean, B = -.05, $SE\ B$ = .04, CI_{95} = -.14 to .02. Agreeableness had no indirect relationship with the abstract/representative dimension when CVPA was evaluated at +1 standard deviation above its mean, B = -.06, $SE\ B$ = .05, CI_{95} = -.17 to .02. Therefore, no non-moderated mediating relationship was suggested.

As noted above (H1), the direct effect of agreeableness on the abstract/representative dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between agreeableness and visual preference, there was no relationship estimated between agreeableness and the abstract/representative dimension at low values of CVPA, B = .50, $SE\ B$ = .30, CI_{95} = -.10 to 1.09. No relationship was estimated between agreeableness and the abstract/representative dimension at the mean value of CVPA, B = .46, $SE\ B$= .24, CI_{95} = -.004 to .92. The same finding was noted at high values of CVPA, B = .42, $SE\ B$ = .33, CI_{95} = -.23 to 1.06. These conditional direct effect estimates further underscore

the lack of support for H3, which was also noted by the non-significant interaction between agreeableness and CVPA reported above.



Index of Moderated Mediation B = -.02, SE = .02, CI_{95} = -.07 to .02.

Figure 16. Model of relationship between agreeableness, political orientation, and the abstract/representative dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

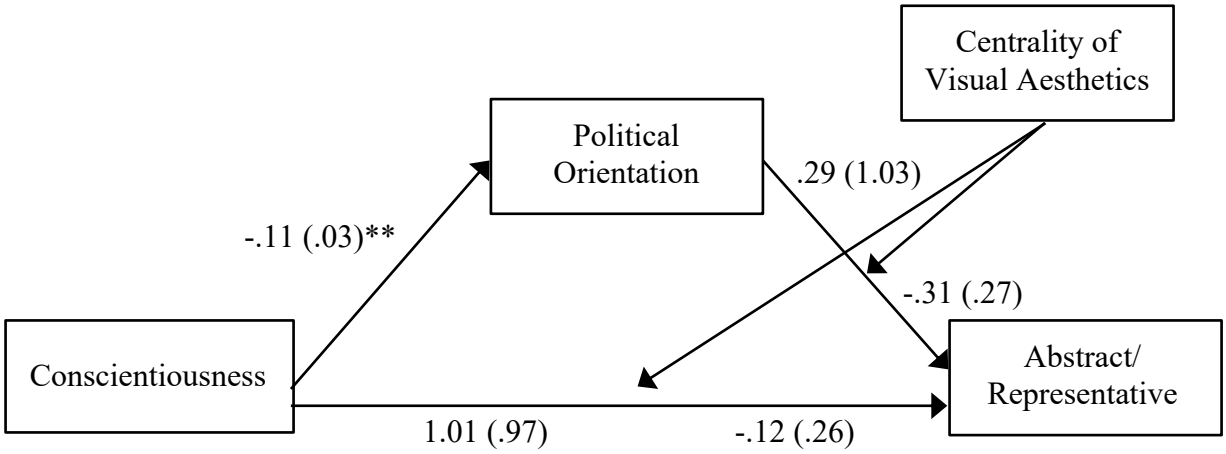
Conscientiousness. In the final moderated mediation analysis predicting visual preference based on the abstract/representative dimension, conscientiousness was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between conscientiousness and the visual preference. The first regression predicting political orientation was statistically significant, R^2 = .01, $F(1,974) = 11.80$, $p < .001$. Conscientiousness had a negative relationship with political orientation, B = -.11, $SE\ B$ = .03, $p < .001$. Conscientiousness was expected to predict right-leaning political orientation. H2 was supported for conscientiousness.

The second regression predicting the abstract/representative dimension was statistically significant, R^2 = .03, $F(5,970) = 6.58$, $p < .001$. However, the individual terms within this second regression did not reach statistical significance. Political

orientation did not have a significant relationship with the abstract/representative dimension, B = .29, $SE\ B$ = 1.03, p = .78. Thus, H4 was not supported. Conscientiousness did not have a significant relationship with the abstract/ representative dimension, B = 1.01, $SE\ B$ = .97, p = .30. Thus, H1 was not supported. CVPA did not have a significant relationship with the abstract/representative dimension (there was not a specific hypothesis about this relationship), B = .55, $SE\ B$ = 1.03, p = .59. The interaction between political orientation and CVPA did not significantly predict the abstract/representative dimension, B = -.31, $SE\ B$ = .27, p = .25. Thus, H5 was not supported. The interaction between CVPA and conscientiousness also did not significantly predict the abstract/representative dimension, B = -.12, $SE\ B$ = .26, p = .63. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, B = .03, $SE\ B$ = .03, CI_{95} = -.02 to .11. Therefore, H6 was not supported. When examining the conditional indirect effects, conscientiousness had a positive indirect relationship with the abstract/representative dimension when CVPA was evaluated at -1 standard deviation below its mean, B = .07, $SE\ B$ = .04, CI_{95} = .01 to .16. Conscientiousness also had a positive indirect relationship with the abstract/representative dimension when CVPA was set to its mean, B =.10, $SE\ B$ = .04, CI_{95} = .03 to .17. Additionally, conscientiousness had a positive indirect relationship with the abstract/representative dimension when CVPA was evaluated at +1 standard deviation above its mean, B = .12, $SE\ B$ = .05, CI_{95} = .04 to .22. These findings suggest a mediation without moderation, where people who are higher on conscientiousness are more politically conservative, which in turn predicts a preference for representative visuals. This conclusion should be taken with caution, however, because no significant relationship was found between political orientation and visual preference in the second regression.

As noted above (H1), the direct effect of conscientiousness on the abstract/representative dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between conscientiousness and visual preference, there was a positive direct relationship estimated between conscientiousness and the abstract/representative dimension at low values of CVPA, B = .64, $SE\ B$ = .27, CI_{95} = .12 to 1.16. Additionally, a direct relationship was estimated between conscientiousness and the abstract/representative dimension at the mean value of CVPA, B = .55, $SE\ B$= .20, CI_{95} = .15 to .95. The same finding was not noted at high values of CVPA, B = .46, $SE\ B$ = .29, CI_{95} = -.11 to 1.03. These mixed conditional direct effects show some support for H3.



Index of Moderated Mediation B = .03, SE = .03, CI_{95} = -.02 to .11.

Figure 17. Model of relationship between conscientiousness, political orientation, and the abstract/representative dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

Predicting the Angular/Curved Dimension

Neuroticism. In the first moderated mediation analysis predicting visual preference based on the angular/curved dimension, neuroticism was entered as the

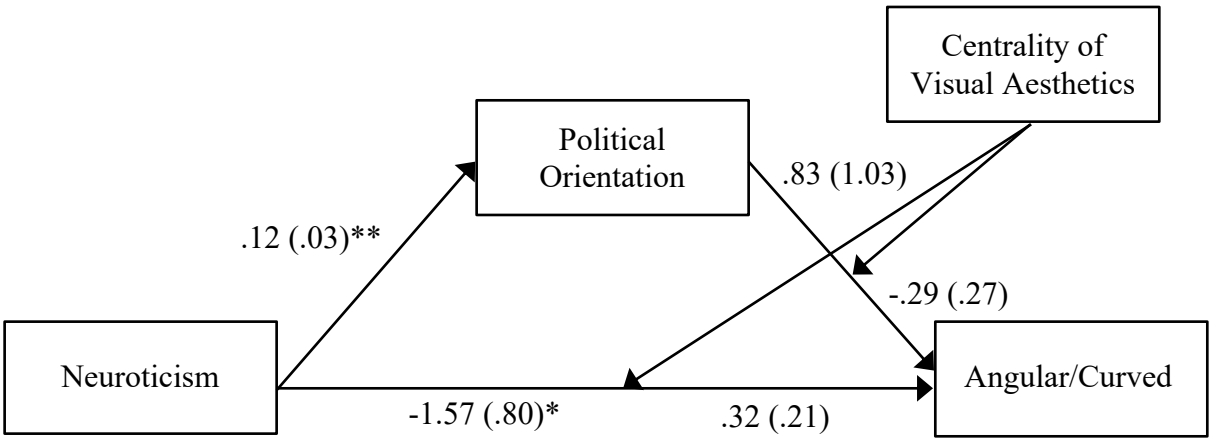
primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between neuroticism and the visual preference. The first regression predicting political orientation was statistically significant, $R^2 = .02$, $F(1,974) = 22.83$, $p < .001$. Neuroticism had a significant positive relationship with political orientation, suggesting higher scores on neuroticism predicted more left-leaning political orientation, $B = 0.12$, $SE\ B = .03$, $p < .001$. This is the same finding noted above for neuroticism. H2 was not supported.

The second regression predicting the angular/curved dimension approached but did not reach statistical significance, $R^2 = .01$, $F(5,970) = 2.18$, $p = .055$. However, one of the individual terms within this second regression, neuroticism, did reach statistical significance. Political orientation did not have a significant relationship with the angular/curved dimension, $B = .83$, $SE\ B = 1.03$, $p = .42$. Thus, H4 was not supported. Neuroticism did have a significant negative relationship with the angular/curved dimension, $B = -1.57$, $SE\ B = .80$, $p < .05$. Thus, H1 was supported. CVPA did not have a significant relationship with the angular/curved dimension (there was not a specific hypothesis about this relationship), $B = -.78$, $SE\ B = .56$, $p = .16$. The interaction between political orientation and CVPA did not significantly predict the angular/curveddimension, $B = -.29$, $SE\ B = .27$, $p = .29$. Thus, H5 was not supported. The interaction between CVPA and neuroticism also did not significantly predict the angular/curved dimension, $B = .32$, $SE\ B = .21$, $p = .13$. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, $B = -.04$, $SE\ B = .04$, $CI_{95} = -.13$ to $.03$. Therefore, H6 was not supported. When examining the conditional indirect effects, neuroticism was estimated to have no indirect relationship with the angular/curved dimension when CVPA was evaluated at -1 standard deviation below its mean, $B = -.004$, $SE\ B = .04$, $CI_{95} = -.08$ to $.08$. Neuroticism was also estimated to have no indirect relationship with the angular/curved dimension when CVPA was set to its mean, $B = -.03$, $SE\ B = .03$, $CI_{95} = -.09$ to $.02$. Neuroticism was

additionally estimated to have no indirect relationship with the angular/curved dimension when CVPA was evaluated at +1 standard deviation above its mean, *B* = -.06, *SE B* = .04, CI_{95} = -.14 to .01. Together, these findings indicate no mediation or moderated mediation for neuroticism.

As noted above (H1), the direct effect of neuroticism on the angular/curved dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between neuroticism and visual preference, there was a negative direct relationship estimated between neuroticism and the angular/curved dimension at low values of CVPA, *B* = -.60, *SE B* = .22, CI_{95} = -.1.03 to -.17. Additionally, a direct negative relationship was estimated between neuroticism and the angular/curved dimension at the mean value of CVPA, *B* = -.37, *SE B*= .16, CI_{95} = -.69 to -.04. However, the same finding was not noted at high values of CVPA, *B* = -.13, *SE B* = .23, CI_{95} = -.58 to .32. These mixed conditional direct effects show some support for H3, although there was a non-significant interaction between conscientiousness and CVPA reported above.



Index of Moderated Mediation B = -.04, SE = .04, CI_{95} = -.13 to .03.

Figure 18. Model of relationship between neuroticism, political orientation, and the angular/curved dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

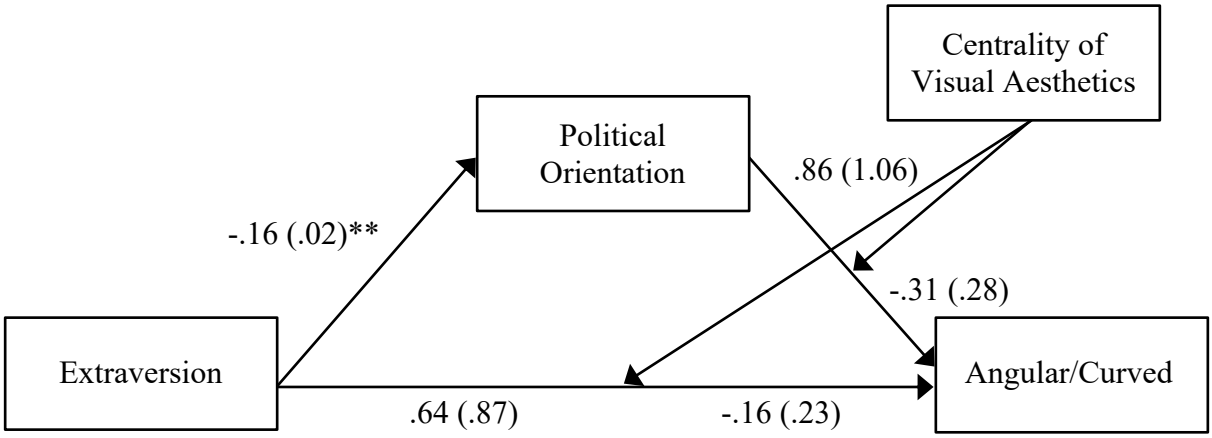
Extraversion. In the next moderated mediation analysis predicting visual preference based on the angular/curved dimension, extraversion was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between extraversion and the visual preference. The first regression predicting political orientation was statistically significant, $R^2 = .03$, $F(1,974) = 34.25$, $p < .001$. Also noted above, extraversion had a significant negative relationship with political orientation, suggesting higher scores on extraversion predicted more right-leaning rather than the hypothesized left-leaning political orientation, $B = -0.16$, $SE\ B = .03$, $p < .001$. H2 was not supported for extraversion.

The second regression predicting the angular/curved dimension was not statistically significant, $R^2 = .004$, $F(5,970) = .78$, $p = .562$. Additionally, the individual terms within this second regression did not reach statistical significance. Political orientation did not have a significant relationship with the angular/curved dimension, $B = .86$, $SE\ B = 1.06$, $p = .42$. Thus, H4 was not supported. Extraversion did not have a significant relationship with the angular/curved dimension, $B = .64$, $SE\ B = .87$, $p = .47$. Thus, H1 was not supported. CVPA did not have a significant relationship with the angular/curved dimension (there was not a specific hypothesis about this relationship), $B = .55$, $SE\ B = .70$, $p = .43$. The interaction between political orientation and CVPA did not significantly predict the angular/curved dimension, $B = -.31$, $SE\ B = .28$, $p = .27$. Thus, H5 was not supported. The interaction between CVPA and extraversion also did not significantly predict the angular/curved dimension, $B = -.16$, $SE\ B = .23$, $p = .47$. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, $B = .05$, $SE\ B = .05$, $CI_{95} = -.04$ to $.16$. Therefore, H6 was not supported. Extraversion was not estimated to have an indirect relationship with the angular/curved dimension when CVPA was evaluated at -1 standard deviation below its mean, $B =$

.01, *SE B* = .05, CI_{95} = -.09 to .11. Extraversion also had no indirect relationship with the angular/curved dimension when CVPA was set to its mean, *B* = .04, *SE B* = .03, CI_{95} = -.02 to .12. Additionally, extraversion had no indirect relationship with the angular/curved dimension when CVPA was evaluated at +1 standard deviation above its mean, *B* = .08, *SE B* = .05, CI_{95} = -.01 to .19. These findings indicate no mediating relationship for extraversion.

As noted above (H1), the direct effect of extraversion on the angular/curved dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between extraversion and visual preference, there was no relationship estimated between extraversion and the angular/curved dimension at low values of CVPA, *B* = .15, *SE B* = .25, CI_{95} = - .34 to .63. No relationship was estimated between extraversion and the angular/curved dimension at the mean value of CVPA, *B* = .03, *SE B*= .18, CI_{95} = -.32 to .37. The same finding was noted at high values of CVPA, *B* = -.09, *SE B* = .24, CI_{95} = -.55 to .37. These conditional direct effect estimates further underscore the lack of support for H3, which was also noted by the non-significant interaction between extraversion and CVPA reported above.



Index of Moderated Mediation B = .05, SE = .05, CI_{95} = -.04 to .16.

Figure 19. Model of relationship between extraversion, political orientation, and the angular/curved dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

Openness. Next, openness was entered as the primary predictor, political orientation as the mediator, CVPA as the moderator between political orientation and the visual preference and between openness and the visual preference. The first regression predicting political orientation was statistically significant, R^2 = .25, F(1,974) = 325.35, p < .001. Openness had a significant positive relationship with political orientation, suggesting higher scores on openness predicted more left-leaning political orientation, B = .54, $SE\ B$ = .03, p < .001. Openness was expected to predict left-leaning political orientation. H2 was supported for openness.

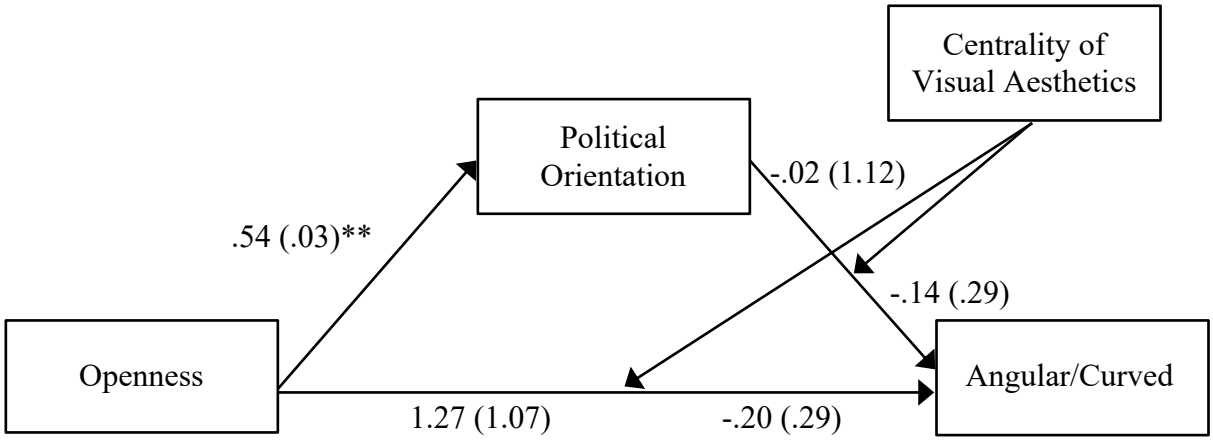
The second regression predicting the angular/curved dimension was not statistically significant, R^2 = .01, F(5,970) = 1.59, p = .159. The individual terms within this second regression did not reach statistical significance, as well. Political orientation did not have a significant relationship with the angular/curved dimension, B = -.02, $SE\ B$ = 1.12, p = .99. Thus, H4 was not supported. Openness did not have a significant relationship with the angular/curved dimension, B = 1.27, $SE\ B$ = 1.07, p = .24. Thus, H1

was not supported. CVPA did not have a significant relationship with the angular/curved dimension (there was not a specific hypothesis about this relationship), B = .63, $SE\ B$ = 1.13, p = .58. The interaction between political orientation and CVPA did not significantly predict the angular/curved dimension, B = -.14, $SE\ B$ = .29, p = .63. Thus, H5 was not supported. The interaction between CVPA and openness also did not significantly predict the angular/curved dimension, B = -.20, $SE\ B$ = .30, p = .49. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, B = -.08, $SE\ B$ = .16, CI_{95} = -.39 to .22. Therefore, H6 was not supported. Openness was estimated to have no relationship with the angular/curved dimension when CVPA was evaluated at -1 standard deviation below its mean, B = -.24, $SE\ B$ = .17, CI_{95} = -.57 to .10. However, conditional indirect effects indicated that openness had a negative indirect relationship with the angular/curved dimension when CVPA was set to its mean, B = -.29, $SE\ B$ = .13, CI_{95} = -.55 to -.04. Openness was additionally estimated to have a negative indirect relationship with the angular/curved dimension when CVPA was evaluated at +1 standard deviation above its mean, B = -.35, $SE\ B$ = .17, CI_{95} = -.69 to -.01. These findings suggest that, for people who found at least some, if not a lot of value in the visual aesthetics of their items, the more open to new experiences these people were, the more liberal they were and the more they were inclined to like angular rather than curved visuals. This is opposite of what was expected, based on the literature. However, this conclusion should be taken with extreme caution because of the lack of significant findings in predicting the angular/curved dimension either in the second regression analysis or with the index of moderated mediation.

As noted above (H1), the direct effect of openness on the angular/curved dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between openness and visual preference, there was a positive direct relationship estimated between openness and the

angular/curved dimension at low values of CVPA, B = .66, $SE\ B$ = .31, CI_{95} = .04 to 1.28. But there was no relationship estimated between openness and the angular/curved dimension at the mean value of CVPA, B = .51, $SE\ B$= .28, CI_{95} = -.03 to 1.06. The same finding was noted at high values of CVPA, B = .36, $SE\ B$ = .38, CI_{95} = -.39 to 1.12. These conditional direct effect estimates show some possible support for H3, however, there was still a non-significant interaction between openness and CVPA as reported above.



Index of Moderated Mediation B = -.08, SE = .16, CI_{95} = -3.9 to .22.

Figure 20. Model of relationship between openness, political orientation, and the angular/curved dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

Agreeableness. In the analysis using agreeableness as the primary predictor, the first regression predicting political orientation was not statistically significant, R^2 = .002, $F(1,974) = 2.23$, p = .14. Agreeableness had no relationship with political orientation, B = .05, $SE\ B$ = .04, p = .14. H2 was not supported for agreeableness.

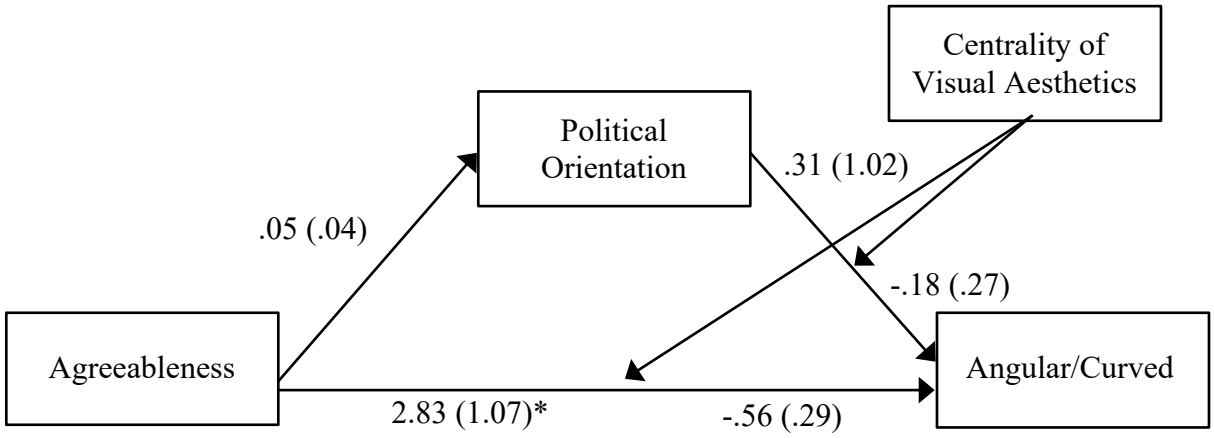
The second regression predicting the angular/curved dimension was statistically significant, R^2 = .02, $F(5,970) = 3.71$, $p < .001$. However, only one of the individual terms within this second regression reached statistical significance. Political orientation did not have a significant relationship with the angular/curved dimension, B = .31, $SE\ B$ =

1.02, $p = .31$. Thus, H4 was not supported. Agreeableness did have a significant positive relationship with the angular/curved dimension, $B = 2.83$, $SE\ B = 1.07$, $p < .01$. Thus, H1 was supported. CVPA did not have a significant relationship with the angular/curved dimension (there was not a specific hypothesis about this relationship), $B = 2.02$, $SE\ B = 1.12$, $p = .07$. The interaction between political orientation and CVPA did not significantly predict the angular/curved dimension, $B = -.18$, $SE\ B = .27$, $p = .50$. Thus, H5 was not supported. The interaction between CVPA and agreeableness also did not significantly predict the angular/curved dimension, $B = -.56$, $SE\ B = .29$, $p = .0512$. Thus, H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, $B = -.01$, $SE\ B = .02$, $CI_{95} = -.06$ to .03. Therefore, H6 was not supported. Agreeableness had no indirect relationship with the angular/curved dimension when CVPA was evaluated at -1 standard deviation below its mean, $B = -.01$, $SE\ B = .02$, $CI_{95} = -.06$ to .03. Agreeableness also had no indirect relationship with the angular/curved dimension when CVPA was set to its mean, $B = -.02$, $SE\ B = .02$, $CI_{95} = -.06$ to .01. Agreeableness had no indirect relationship with the angular/curved dimension when CVPA was evaluated at +1 standard deviation above its mean, $B = -.03$, $SE\ B = .03$, $CI_{95} = -.09$ to .01. In other words, no mediation was found.

As noted above (H1), the direct effect of agreeableness on the angular/curved dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between agreeableness and visual preference, there was a positive direct relationship estimated between agreeableness and the angular/curved dimension at low values of CVPA, $B = 1.15$, $SE\ B = .30$, $CI_{95} = .56$ to 1.74. Additionally, a positive direct relationship was estimated between agreeableness and the angular/curved dimension at the mean value of CVPA, $B = .74$, $SE\ B = .23$, $CI_{95} = .29$ to 1.20. The same finding was not noted at high values of CVPA, $B = .34$, $SE\ B = .32$, $CI_{95} = -.30$ to .97. These mixed conditional direct effects show some support for H3,

although there was a non-significant interaction between conscientiousness and CVPA reported above.



Index of Moderated Mediation B = -.01, SE = .02, CI_{95} = -.06 to .03.

Figure 21. Model of relationship between agreeableness, political orientation, and the angular/curved dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

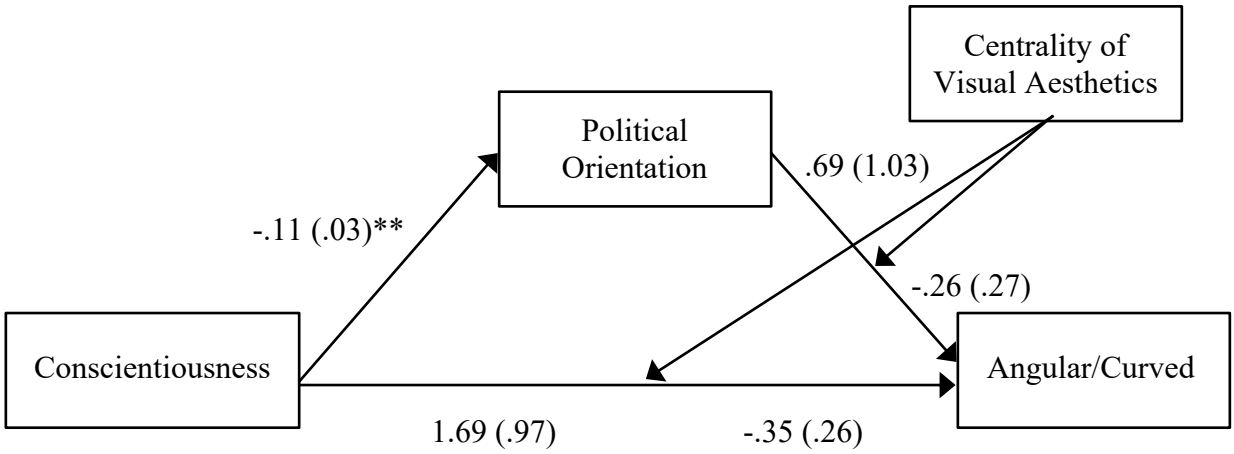
Conscientiousness. With conscientiousness as the primary predictor, the first regression predicting political orientation was statistically significant, R^2 = .01, F(1,974) = 11.80, p < .001. Conscientiousness had a negative relationship with political orientation, supporting H2, B = -.11, $SE\ B$ = .03, p < .001.

The second regression was not statistically significant, R^2 = .01, F(5,970) = 1.91, p = .09. No individual terms within this second regression were significant. Political orientation did not have a significant relationship with the angular/curved dimension, B = .69, $SE\ B$ = 1.03, p = .51. H4 was not supported. Conscientiousness did not have a significant relationship with the angular/curved dimension, B = 1.69, $SE\ B$ = .97, p = .08. H1 was not supported. CVPA did not have a significant relationship with the angular/curved dimension (there was not a specific hypothesis about this relationship), B = 1.33, $SE\ B$ = 1.03, p = .19. The interaction between political orientation

and CVPA did not significantly predict the angular/curved dimension, $B =$ -.26, $SE\ B =$ .27, $p = .34$. H5 was not supported. The interaction between CVPA and conscientiousness also did not significantly predict the angular/curved dimension, $B =$ -.35, $SE\ B = .26$, $p = .18$. H3 was not supported.

The index of moderated mediation had a 95% confidence interval that included zero, $B = .03$, $SE\ B = .04$, $CI_{95} =$ -.03 to .11. Therefore, H6 was not supported. Conscientiousness had no indirect relationship with the angular/curved dimension when CVPA was evaluated at -1 standard deviation below its mean, $B = .01$, $SE\ B = .03$, $CI_{95} =$ -.06 to .08. Conscientiousness also had no indirect relationship with angular/curved dimension when CVPA was set to its mean, $B = .03$, $SE\ B = .02$, $CI_{95} =$ -.01 to .08. Additionally, conscientiousness had no indirect relationship with the angular/curved dimension when CVPA was evaluated at +1 standard deviation above its mean, $B =$ .05, $SE\ B = .04$, $CI_{95} =$ -.01 to .13. No evidence of mediation was found.

As noted above (H1), the direct effect of conscientiousness on the angular/curved dimension was not significant. According to the estimated conditional direct effects based on the moderation of the direct relationship between conscientiousness and visual preference, there was a positive direct relationship estimated between conscientiousness and the angular/curved dimension at low values of CVPA, $B = .65$, $SE\ B = .27$, $CI_{95} =$ .13 to 1.17. Additionally, a direct relationship was estimated between conscientiousness and the angular/curved dimension at the mean value of CVPA, $B = .40$, $SE\ B = .20$, $CI_{95} =$ .001 to .80. The same finding was not noted at high values of CVPA, $B = .15$, $SE\ B = .29$, $CI_{95} =$ -.41 to .71. These mixed conditional direct effects show some support for H3, although there was a non-significant interaction between conscientiousness and CVPA reported above.



Index of Moderated Mediation B = .03, SE = .04, CI_{95} = -.03 to .11.

Figure 22. Model of relationship between conscientiousness, political orientation, and the angular/curved dimension, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001

CHAPTER 9

DISCUSSION

The main objective of this dissertation was to explore the complex relationships between personality, political orientation, and visual taste. Additionally, I investigated whether or not these relationships would be the same for traditionally tested visuals, such as fine art and basic shapes, as for graphic design visuals, such as logos and typography. This was done by conducting a large survey with 976 respondents, to examine individual differences in visual taste across two dimensions, abstract versus representative fine art and logos, and curved versus angular shapes and typography. Finally, I looked at the potential moderating effect of design expertise on these relationships. This chapter discusses the insights that emerged from the analysis conducted on the survey results. I begin by looking at the largely replicated results of the data and then at each of the various hypotheses proposed, by looking at the overarching themes uncovered and how those fit or challenge what was predicted based on the literature.

By far the clearest and easiest result to see is that the majority of people prefer representative art over abstract art and curves over angles, whether as fine art or logo, shape or typography. These results are supported by the majority of the literature and can be seen as a replication of this prior research for representative art (Boselie & Cesaro, 1994; Carl, Richards, Heath 2018; Cotter et al., 2017; Feist & Brady, 2004; Heinrichs &

Cupchik, 1985; Kettlewell, Lipscomb, Evans, & Rosston, 1990; Reber, Schwarz, & Winkielman, 2004; Salkind & Salkind, 1973, 1997) and for curves (Bertamini, Palumbo, Gheorghes, & Galatsidas, 2016; Gomez-Puerto, Munar, & Nadal, 2016; Leder, Tinio, & Bar, 2011; Munar, Gomez-Puerto, Lopez-Navarro, & Nadal, 2014; Palumbo & Bertamini, 2016; Palumbo, Ruta, & Bertamini, 2015; Silvia & Barona, 2009). Additionally, these results appeared to be consistent when moved into the graphic design domain.

When looking at the specific hypotheses, results were most consistent with predictions in the first and second hypotheses. None of the other hypotheses(H3-H6) were supported (however, there were still considerable insights to be had from these results which are discussed later). H1 explored the relationship between the different personality traits (neuroticism, extraversion, openness, agreeableness, conscientiousness) and the visual preferences. While none of the H1 hypotheses were supported for the abstract/representative dimension, they were supported for both neuroticism and agreeableness when looking at the angular/curved dimension. This certainly supports the notion that not all visual aspects will have a connection with personality, which points to just how difficult it can be to test different visual dimensions with visuals.

H2 looked at whether personality trait could predict political orientation. It was supported for both openness and conscientiousness, where, specifically, participants high in openness to new experience were also more liberal, and participants high in conscientiousness were more conservative. Interestingly, one relationship between a personality trait and political orientation was significant but opposite of the predicted relationship. Neuroticism was expected to be correlated with higher conservatism, but in

this sample, the opposite was true. Participants high in neuroticism were likely to be more liberal. The literature certainly has shown, time and again, that openness has been the most consistently linked with liberalism. In fact, two questions within the openness measure ask directly about likeliness to vote for liberal or conservative political candidates. Additionally, as seen in the literature, conscientiousness has been most closely associated with conservatism. Therefore, these results support what has been seen before.

But why was neuroticism the opposite of what was predicted? One potential explanation might be explained by the rise of populism. Obschonka et al. (2018), looked at recent voting behavior in the United States (2016 election of Donald Trump) and United Kingdom (2016 Brexit referendum vote). In both elections the researchers identified themes, "fear, lost pride, and loss aversion" in the populist campaigns (Trump and Pro-Brexit), that could be linked to the neuroticism personality dimension. The researchers found that neuroticism positively predicted the Brexit and Trump votes. But based on the results of this study one might think, as was stated in H2 for neuroticism, that high neuroticism would predict more conservatism as conservatism has been linked to voting for Donald Trump. Why would more liberal respondents be high in neuroticism? The timing of the survey may account for this. The survey was executed on MTurk in January 2020, at the beginning of the 2020 primary election cycle. As Donald Trump is the incumbent, it is liberals who are currently campaigning. Perhaps the political messages or just the impact of this election have increased neuroticism in those high in liberalism. Certainly, this unusual outcome is worthy of future study and begs the question, would the results be the same if it was not an election year.

The third and fifth hypotheses, H3 & H5, looked at the potential for design expertise or design sophistication, as measured by CVPA (the centrality of visual products aesthetic) to moderate the relationships between personality and visual dimension (H3), and political orientation and visual dimension (H5). One potential explanation as to the lack of supported hypotheses in this area might lie in the CVPA measure itself. The CVPA was designed to measure, "the level of significance that visual aesthetics holds for a particular consumer in his/her relationship with products" (Bloch et al., 2003, p. 552). However, graphic design, specifically the logos and typography used in this survey, are not products. In 2014, Yoo and Kim used the CVPA to address differences in website design perceptions. They applied the CVPA directly to the website context, as was done in my survey, and also had confounding results. Based on these issues, a group of researchers recognized the potential of the CVPA to be used as a measure to understand individual differences in aesthetics but that it was not ideal for web design. Pengnate, Sarathy, and Arnold (2019) based their new measure, the CVWA (centrality of visual website aesthetics) on the CVPA. Perhaps a measure specific to graphic design could be developed to address individual differences in graphic design sensitivity. One last note regarding CVPA. Another potential explanation for the lack of moderation by CVPA is how highly correlated the personality traits and CVPA were. Neuroticism was negatively correlated with CVPA, and all other personality traits, especially openness were positively correlated.

There were some findings that showed potential support but, as was noted in the results, they should be considered with caution as they were not fully supported. Specifically, in the abstract/representative dimension, there was some support for a non-

moderated mediated relationship between those high in extraversion, being higher in conservatism, and preferring more representative visuals. The converse non-moderated mediated relationship was seen between those high in neuroticism, being higher in liberalism, and preferring more abstract visuals. There was also an indication of a mediated relationship between conscientiousness, conservatism and preference for representative images, and potentially a mediated relationship between openness, liberalism, and preference for abstract images.

These same relationships of mediation were not seen as clearly in the curved versus angular results, although there was some support for H3 for neuroticism, openness, agreeableness, and conscientiousness. Of note, based on a conditional indirect relationship, openness showed there might be some moderation effect of CVPA (again, CVPA was also the most highly correlated with openness out of the personality traits). Specifically, that people who were higher in CVPA, high in openness to new experience, and high in liberalism were more inclined to like angular over curved visuals. While this is opposite of what was predicted, one potential explanation might be that those who are high in these constructs might be more willing to like something disliked by the majority. As was addressed in the literature review, those high in openness tend to be more willing to take risks (e.g. with regards to alcohol and drug use) (Booth-Kewley & Vickers, 1994). Perhaps preferring angles over curves can be likened to risky behavior. In addition, being high in neuroticism, which was related to liberalism, was also associated with a preference for angular visuals. Conversely, agreeableness and conscientiousness had some results that supported a relationship with preference for curved shapes.

Again, however, these results should be interpreted with caution. Even though the

statistics suggest a mediated relationship (from the conditional indirect effects estimated from the bootstrap-based mediation analysis), in each case there was no statistically significant direct relationship found between political orientation (the mediating variable) and the visual preference measure. This means the conditional indirect effects found in each case might be driven primarily by the correlation between the personality measure and political orientation, where political orientation and visual preference are both being explained by personality rather than political orientation really acting as a mediator between personality and visual preference.

Finally, there were a few compelling differences between the results of the abstract/ representative and angular/curved dimensions. Specifically, the typography results were very inconsistent, while the fine art and logo visuals had comparable results within the abstract/representative dimension. Additionally, the shape results were some of the most highly correlated of the data between the main measures, while the type images were the least correlated. Therefore, it appears that while the abstract/representative dimension functioned similarly across the art and graphic design domains the angular/curved measures of shape and type did not. As this is the case, the researcher has conducted 20 more moderated mediation analyses to look at the individual image categories, fine art, logo, shape, and typography (see Appendix B). These analyses provide additional insight between the traditional visual aesthetic measures of fine art and shape, as compared to the graphic design measures, of logo and type.

CHAPTER 10

LIMITATIONS

Many of the limitations of this study were outlined earlier in the discussion. However, a few key issues should still be addressed regarding the survey population, the survey method itself, measures used within the survey, and issues with using visuals. I begin with the nature of using a web-based survey service.

First, and foremost, this results in a non-probability convenience sample and MTurk survey participants are compensated for their time and are opting-in rather than opting-out of the survey. There may also be an increase in social desirability bias as MTurkers are compensated for their participation and rated poorly if they do not perform well. But previous studies have been conducted that show that MTurk data can outperform other data sources (i.e. Antoun et al., 2016; Kees, 2017). Because MTurk is a web-based service there are issues with the representativeness of the sample. Per Pew, there is still 11% of the US population that does not use the internet and they are mostly seniors, lower income, and less educated (Anderson et al., 2019). And about a quarter of rural Americans do not have access to high speed internet, which makes them less likely to participate in a service like MTurk (Anderson, 2018).

The second issue stems from the nature of surveys and the types of measures used within the survey. The validity of measures is and always will be an issue with quantitative research in the social sciences that assigns numeric measurement to

conceptual items. There can be issues with content, predictive, and construct validity of a measure. By using established measures such as those used for personality, I attempted to avoid such issues. However, some measures were adapted and may have had issues of validity, especially those measuring visual preferences with graphic design images. While I pre-tested these images, it is clear from the results and issues of reliability that more work needs to be done to create measures for accessing preferences in graphic design visuals.

There is also an issue of generalizability with visual stimuli. Stimuli that use shapes might allow for specific measurement of a construct, such as the angular/curved dimension used in this study; however, when that same construct was moved into a more generalizable example, the typography stimulus, the individual differences were less obvious. Getting to more generalizable results is the goal but doing so with visual materials can be messy and difficult because of all the potential confounds. Visuals include many elements that can be manipulated including layout, color, object size, visual hierarchy, and font, to name only a few. Context, environment, media placement can also influence audiences. Finally, visuals that are type-based can be problematic, as they not only communicate a message through use of language, but also with a visual language that many consumers may be very familiar with. In a recent study, Haenschen and Tamul (2019) looked at whether or not certain typefaces have politically ideological attributes. They found that sans serif typefaces were viewed as more liberal and that the participants in their two experiments rated typefaces they liked as more associated with their political ideology. This brings me to limitations associated with political orientation.

Political orientation is a complex concept and although I used multiple measures

and checked for reliability, the timing of the 2020 election might have created a potential confound in my results, as seen in the example of neuroticism mentioned in the discussion. There are also issues with the fact that the openness personality measure includes questions of political orientation within. Using an additional set of measures, such as the moral foundations measure (Graham, Haidt & Nosek, 2009), might provide additional insight but would have also created a much longer survey.

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CHAPTER 11

CONCLUSION

My hope is that this study contributes a number of ideas to theory, both from an originality and practical standpoint. Also, I hope that these findings have practical implications for graphic designers, especially those working on political campaigns. Despite limitations, more is known now about how art and generic visual preference might be generalized to graphic design preference, and this research shows some compelling support for a relationship between personality, politics, and visual taste.

This research is among the first to show the how visual aesthetics and graphic design elements can be used to connect and communicate with targeted political audiences. So little is really known academically about how visual elements in graphic design impact political messaging, which is why I believe this study and its findings make a valuable contribution to knowledge within this area. I also believe that the creation of more valid constructs for visual research in advertising and communication design is necessary for aesthetic preference research. Designers often defend their decisions with anecdotal evidence, but further research in this area could provide scientific evidence to back up and support design decisions.

In terms of future research in this area, key findings of this study can help to create a foundation. Specifically, this study supported existing literature that showed general preferences for representative visuals over abstract visuals and for curved shapes

over angular shapes. These results crossed over from traditional visual stimuli used in previous studies, like fine art and basic shapes, to the graphic design images used in this study, logos and typography. The results showed that certain personality traits and the political orientations correlated with those personality traits – openness and neuroticism with liberalism, extraversion and conscientiousness with conservatism – were related to visual preferences within the abstract/representative domain. Those who were high in liberalism, and consequently, openness and neuroticism were related to preference for more abstract images. And conservatives, high in extraversion, and those high in conscientiousness, were related to preference for more representative images. Additionally, those high in openness and neuroticism were linked to preference for angular images, while participants high in agreeableness and conscientiousness were linked to preference for curves.

By showing that individual differences in personality and political identity may also be correlated to differences in aesthetic preference or visual taste we can better understand why some political messages are more persuasive than others, and how some visual communication is better remembered or received by audiences. Research in this area increases the predictive power of aesthetic preference theory. It also adds to the burgeoning research being done on political identity and visual messaging by other researchers.

There are also a number of applied and practical implications of this research. In order for designers and design educators to benefit from social science research, the actual form of the work (logos, typography, digital illustration etc.) must be used as stimuli. While it is understandable that academics have focused on stimuli that were

easily controlled and manipulated, such as fine art and basic shapes, the findings of such research just cannot be translated to the work of visual designers in all but the most general of ways. As an example of this, the more problematic type stimuli used in this survey demonstrates that type, while a shape is more than just that and must be studied with other contexts in mind.

Furthermore, this research supports the need for targeted visual design and demonstrates that there are indeed individual differences in visual taste. Designers must often defend their design choices, with little to go on but anecdotal knowledge and personal experience. While there is still much to test and much more to know about differences in visual taste, the results of this study showcase clear general preferences for representative and curvilinear visuals. And more specifically, the results demonstrate that there are indeed differences in visual taste based on personality traits and political orientation. Designers often know who their target audience is and with research of this kind they can make more informed decisions. In order for design to work effectively, it must appeal to the intended audience, and that only works if designers know what the audience finds appealing.

Design educators can also benefit from understanding differences in visual taste, but more importantly, they can point to the findings of this dissertation, and studies like this, to show that there are*,* in fact differences. Advertisers often change the tone of ad copy, music in a TV ad, or models in a photo to appeal to the target audience. Designers need to be taught to make the same informed choices. Design students often begin by designing to their own taste. This research shows how important it is for students to understand that what they may find appealing may not be effective with all audiences.

Designers who understand their audience's preferences can produce better visual messages to suit those preferences. From an even more practical standpoint, educators can use the connection between personality and political orientation to help explain the differences students themselves have, in terms of taste. As students begin to understand what informs their taste, they are also able to understand why taste is different, and that there in not necessarily good or bad taste.

Which leads me to one more important point about design education. It is understandable for design educators to showcase the work of award-winning and cutting-edge designers in their classrooms. It is also understandable that students should experiment and aim to make design work that explores new paradigms. Bu it is vital that design educators train students to make effective design. However, antithetically, winning design and effective design are not always the same. Take for example, the differences in what movies win at the Academy Awards versus those at the MTV Movie Awards. There are few films that have done well at both awards shows, although there are notable exceptions, such as Malcolm X in 1992, which was nominated at both.

The phrase "form follows function" or more precisely "form ever follows function" was coined by a 20th-century American architect, Louis Sullivan (Rawsthorn, 2009). This phrase is a good reminder that the look of a design, the form, must derive from the function of that design. John Eifler, a Chicago-based architect said, "It takes a brave soul to buy one of Wright's houses," in describing the functional issues of the houses of the legendary Frank Lloyd Wright. Eifler has renovated almost two dozen Wright-designed homes because while innovative the designs were not functional (e.g., the roofs were not structurally sound, there were leaks, the foundations were weak)

(Varinsky & Garfield, 2017). And yet, this prolific, and arguably most well-known of American architects is lauded in architecture design classrooms. Graphic design educators do much the same, showing the compelling work of famous designers. This dissertation, and research of this kind, serves as a reminder that the best design functions best when it appeals to the intended audience.

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TABLES

Table 1. Participant Descriptives N=976

Item	*N (%)*	*M*	SD
Age	976	36.2	11.2
HHI[a]	976	3.40	1.6
Education[b]	976	3.67	.9
Gender[b]:	976		
Male	567 (58.1%)		
Female	396 (40.6%)		
Other	9 (.9%)		
Prefer Not to Answer	4 (.4%)		
Ethnicity/Race	976		
Asian/Islander	62 (6.3%)		
Native American	5 (.5%)		
Hispanic	51 (5.2%)		
Black	92 (9.4%)		
White	703 (72%)		
Multi-Racial	56 (5.7%)		
Prefer Not to Answer	7 (.7%)		

Notes. [a] Income was measured on an ordinal scale (1=<$19,999, 6=>$100,000 [b]). [b]Education was measured on an ordinal scale (1=<HS, 5=>Graduate Classes or Degree).

Table 2. Descriptives of Image Variables N=976

Item	*%*	*M*	SD
Fine Art Images (Rep+/Abs -)		2.49	3.03
Art Set 1	79.6 / 20.4		
Art Set 2	79.5 / 20.5		
Art Set 3	52.6 / 47.4		
Art Set 4	75.2 / 24.8		
Art Set 5	64.1 / 35.9		
Art Set 6	72.5 / 26.5		
Logo Images (Rep+/Abs -)		1.93	3.19
Logo Set 1	70.4 / 29.6		
Logo Set 2	62.9 / 37.1		
Logo Set 3	58.6 / 41.4		
Logo Set 4	74.9 / 25.1		
Logo Set 5	64.2 / 35.8		
Logo Set 6	65.4 / 34.6		
Shape Images (Curv+/Ang-)		1.55	3.51
Shape Set 1	72.3 / 27.7		
Shape Set 2	73.0 / 27.0		
Shape Set 3	55.4 / 44.6		
Shape Set 4	52.8 / 47.2		
Shape Set 5	52.6 / 47.4		
Shape Set 6	71.5 / 28.5		
Typography Images (Curv+/Ang-)		-0.10	2.63
Type Set 1	68.5 / 31.5		
Type Set 2	70.0 / 30.0		
Type Set 3	31.9 / 68.1		
Type Set 4	30.9 / 69.1		
Type Set 5	62.9 / 37.1		
Type Set 6	30.5 / 69.5		

Table 3. Correlations (Pearson's r) Between All Variables

	Art	Shape	Type	Rep/Abst	Curve/Ang	Pol Orient	CVPA	Neuro	Extra	Open	Agree	Consc
Logo	.257**	.082*	-0.036	.805**	0.04	-.109**	0.023	-.066*	0.009	-0.032	0.056	.085**
Art		0.057	-0.018	.780**	0.031	-.132**	0.029	-0.042	0.01	-.063*	0.041	.086**
Shape			.226**	.088**	.848**	-0.062	-0.001	-0.051	0.009	0.013	.092**	.082**
Type				-0.034	.708**	-0.009	0.021	-.080*	0.017	0.037	.071*	0.025
Rep/Abstract					0.045	-.151**	0.033	-.069*	0.012	-0.059	0.061	.108**
Curve/Ang						-0.05	0.011	-.081*	0.015	0.03	.105**	.074*
Pol Orient							-.070*	.151**	-.184**	.500**	0.048	-.109**
CVPA								-.147**	.282**	.342**	.239**	.194**
Neuro									-.519**	-.175**	-.455**	-.606**
Extra										.231**	.246**	.330**
Open											.351**	.254**
Agree												.492**

*$p < .05$, **$p < .01$ (2-tailed).

Table 4. Correlations (Pearson's r) Between Political Variables

	Democratic Party	Repub_Party_ Reversed	Rev. Social & Cultural	Rev. Economics	Rev. Law & Order
Liberal_Scale_Mean	.474**	.700**	.760**	.703**	.769**
Democratic Party		.481**	.559**	.594**	.560**
Repub_Party_Reversed			.755**	.687**	.740**
Rev. Social & Cultural				.813**	.874**
Rev. Economics					.842**

*$p < .05$, **$p < .01$ (2-tailed).

APPENDICES

APPENDIX A: SURVEY MATERIALS

Intro

Hi!

Thank you for being willing to participate in this research study looking at your preferences in art and design and their possible connection to other differences such as, personality traits, gender, age, political affiliation, education etc.

This study is designed for English speakers. You must be at least 18 years old, an English-speaker, and currently living in the United States to participate.

○ I am fluent in English, 18 years of age or older, and I currently live in the United States.

Informed Consent to Participate in a Research Study

Title of Study: A Survey of Aesthetic Preferences
Principal Investigator: Shannon Zenner (UNC School of Media and Journalism)
Contact: szenner@live.unc.edu
Study Advisor: Francesca Dillman Carpentier (UNC School of Media and Journalism)
Contact: francesca@unc.edu
IRB#: 19-3409
Date: 1/7/2020

What are some general things you should know about research studies? You are being asked to take part in a research study. To join the study is voluntary. You may choose not to participate, or you may withdraw your consent to be in the study, for any reason, without penalty. Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

What is the purpose of this study? The purpose of this research study is to collect data about different types of people, their individual differences (ex. personality traits, gender, age, political affiliation, education) and their preferences for fine art and graphic design.

What will happen if you take part in the study? Your part in this online questionnaire will last approximately 30 minutes. The questionnaire will begin with a series of two images, where you will be

asked which you prefer across multiple categories. Then you will be asked questions about your own attitudes and demographics so that the researcher can describe, overall, the make-up of the participants. This will conclude the research study. At this point, you will be asked to report if you experienced any issues with the study. Finally, you will be given a code to be entered to receive your compensation via MTurk.

What are the possible benefits of being in this study? Research is designed to benefit society by gaining new knowledge. You will not benefit personally from being in this research study.

What are the possible risks or discomforts involved from being in this study? We anticipate few risks in this study. Again, if you find any part of the study upsetting, you may discontinue your participation. You can also talk with the facilitator of this study.

How will your privacy be protected? All of the data you provide will be stored anonymously. MTurk worker IDs will not be shared with anyone outside of the research team and will be removed from the dataset. Note that Amazon.com has stated that the MTurk platform is NOT meant to support participant anonymity. MTurk worker IDs are linked to Amazon.com public profiles. Amazon.com may disclose worker information. Additionally, worker information may be available to others (who submit a request) for tax reporting purposes.

MTurk worker IDs will only be collected for the purposes of distributing compensation and will not be associated with survey responses.

What if you want to stop before your part of the study is complete? You can withdraw from this study at any time, without penalty and skip any question for any reason.

Will you receive anything for being in this study? Will it cost anything? You will receive monetary compensation for participating in this study through your participation in Amazon's Mechanical Turk. There are no costs associated with being in the study.

What if you have questions about this study? You have the right to ask and have answered, any questions you may have about this research. Contact the principal investigator listed above with any questions, complaints, or concerns you may have.

What if you have questions about your rights as a research participant? All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns, or if you would like to obtain information or offer input, please contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Statement of Consent

By clicking "I consent" below, I am asserting that I am at least 18 years old and am agreeing to be a

participant in this research study.

- ○ I consent.
- ○ I do not consent (this will exit you from this survey).

Some of the questions within this survey display differently on a phone/tablet versus a desktop/laptop computer. Please select which device you will be using to take this survey.

- ○ phone or tablet
- ○ desktop or laptop

Desktop RA Logo Intro

In this next section of the questionnaire, we'd like to know about your preferences between pairs of logos.

We will show you six pairs of logos. For each pair, please click on which you prefer or just like best.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, you can click on the images so that they will get larger.

Desktop Astro

Please select which you prefer?

Desktop Camera

Please select which you prefer?

Desktop Globe

Please select which you prefer?

Desktop Tree

Please select which you prefer?

Desktop Plane

Please select which you prefer?

Desktop House

Please select which you prefer?

Desktop RA Art Intro

In this next section of the questionnaire, we'd like to know about your preferences or "taste" in art.

We are now going to show you six pairs of paintings by 20th century artists. For each pair, please click on which of the two paintings you prefer or just like best.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, you can click on the images so that they will get larger.

Desktop Art1

Please select which you prefer?

Desktop Art2

Please select which you prefer?

Desktop Art3

Please select which you prefer?

Desktop Art4

Please select which you prefer?

Desktop Art5

Please select which you prefer?

Desktop Art6

Please select which you prefer?

Desktop Angular vs. Curve Intro

This section of the questionnaire asks you to choose between two shapes. There are no right or wrong answers, we are only interested in which shape you prefer.

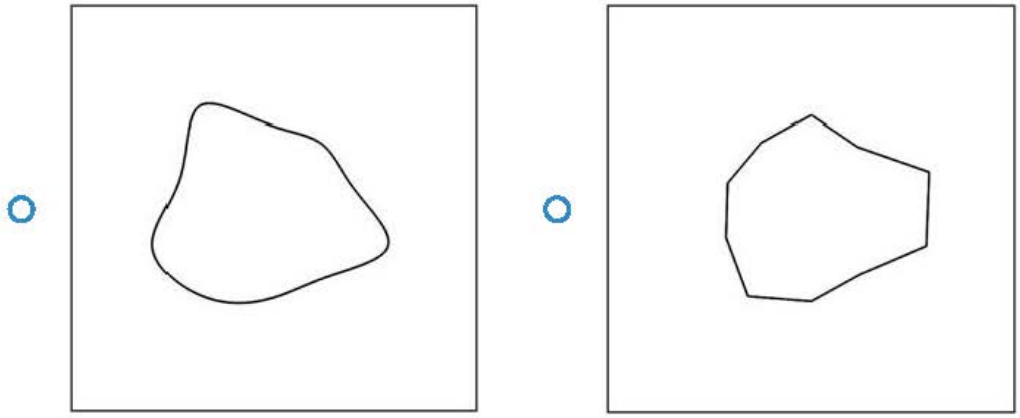
For each pair, please click on which you prefer or just like best.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, you can click on the images so that they will get larger.

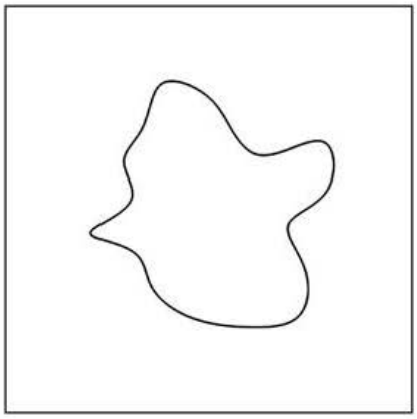
Desktop Shape1

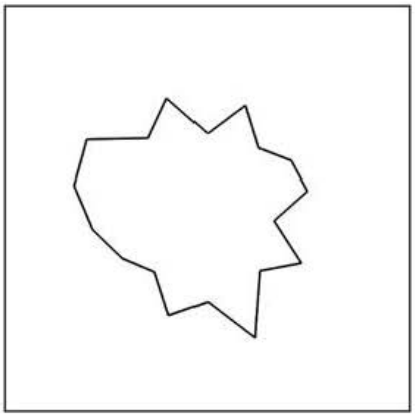
Which of these do you prefer?



Desktop Shape2

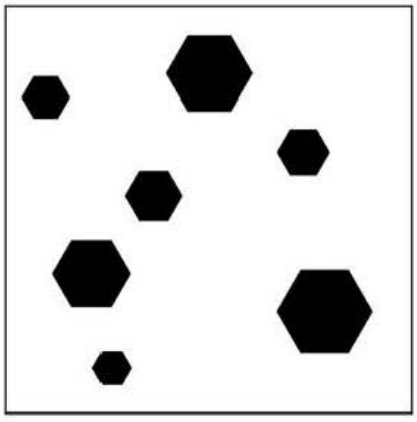
Which of these do you prefer?

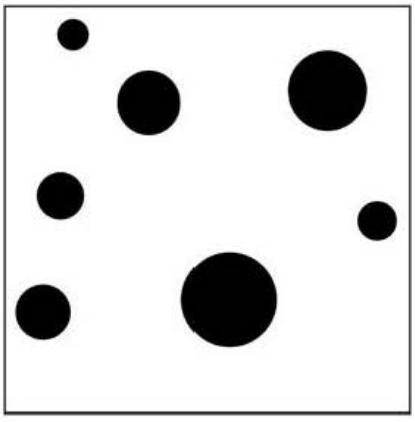




Desktop Shape3

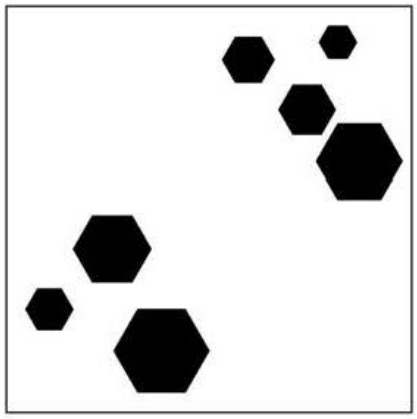
Which of these do you prefer?

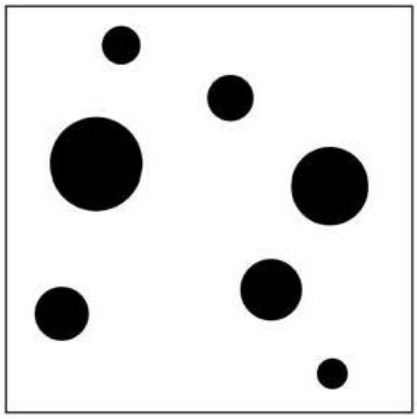




Desktop Shape4

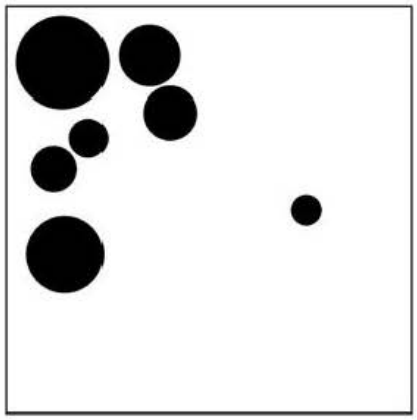
Which of these do you prefer?

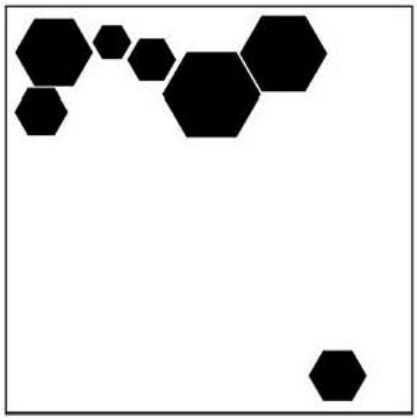




Desktop Shape5

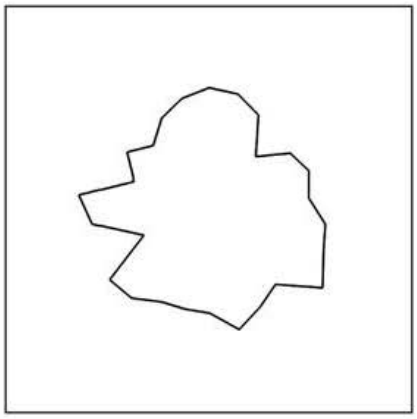
Which of these do you prefer?

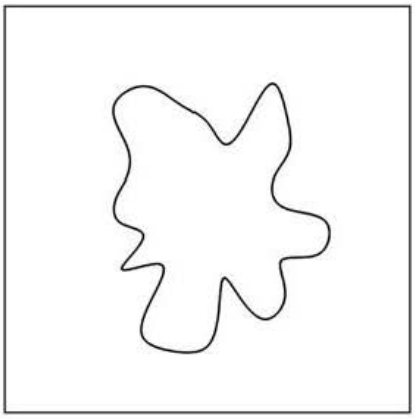




Desktop Shape6

Which of these do you prefer?





Desktop Angular vs. Curve Type Intro

This section of the questionnaire asks you to choose between two fonts or typefaces. There are no right or wrong answers, we are only interested in which you prefer.

For each pair, please click on which you like best in general.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, you can click on the images so that they will get larger.

Desktop Type1

Which of these do you prefer?

Desktop Type2

Which of these do you prefer?

Desktop Type3

Which of these do you prefer?

Desktop Type4

Which of these do you prefer?

Desktop Type5

Which of these do you prefer?

Desktop Type6

Which of these do you prefer?

Phone RA Logo Intro

In this next section of the questionnaire, we'd like to know about your preferences between pairs of logos.

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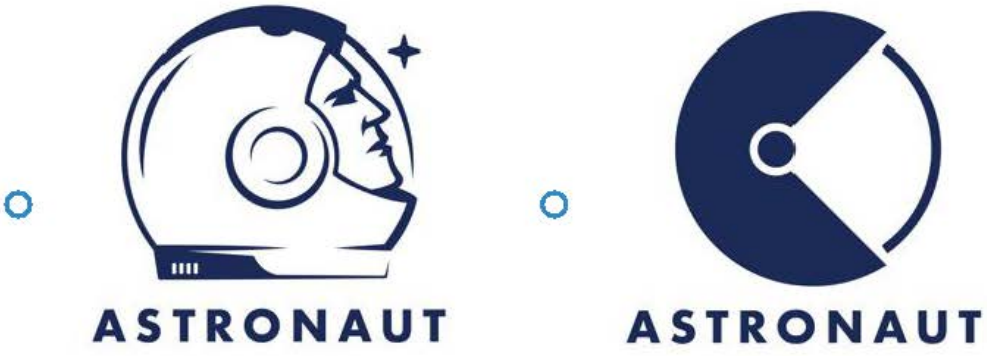
Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, zoom in on the images so that they will get larger.

Phone Astro

Please select which you prefer?



Phone Camera

Please select which you prefer?

Phone Globe

Please select which you prefer?

Phone Tree

Please select which you prefer?

Phone Plane

Please select which you prefer?

Phone House

Please select which you prefer?

Phone RA Art Intro

In this next section of the questionnaire, we'd like to know about your preferences or "taste" in art.

We are now going to show you six pairs of paintings by 20th century artists. For each pair, please click on which of the two paintings you prefer or just like best.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, zoom in on the images so that they will get larger.

Phone Art1

Please select which you prefer?

Phone Art2

Please select which you prefer?

Phone Art3

Please select which you prefer?

Phone Art4

Please select which you prefer?

Phone Art5

Please select which you prefer?

Phone Art6

Please select which you prefer?

Phone Angular vs. Curve Intro

This section of the questionnaire asks you to choose between two shapes. There are no right or wrong answers, we are only interested in which shape you prefer.

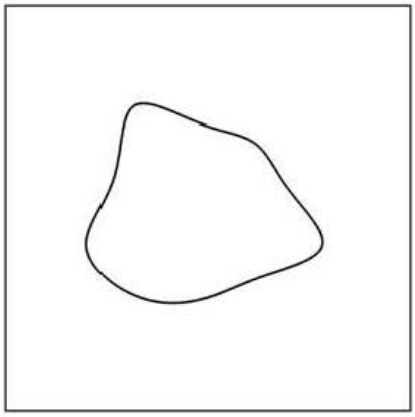
For each pair, please click on which you prefer or just like best.

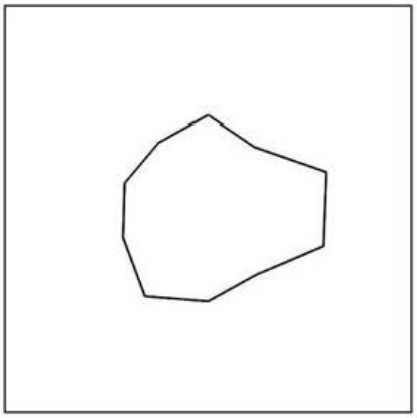
Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, zoom in on the images so that they will get larger.

Phone Shape1

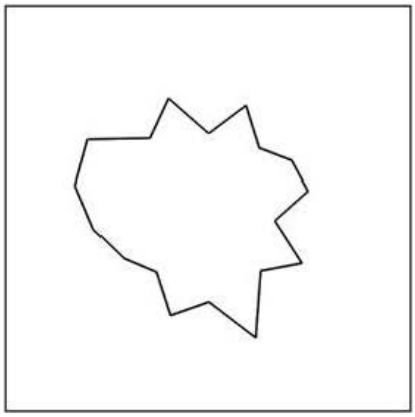
Which of these do you prefer?

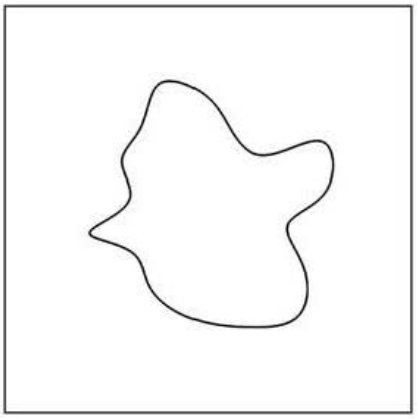




Phone Shape2

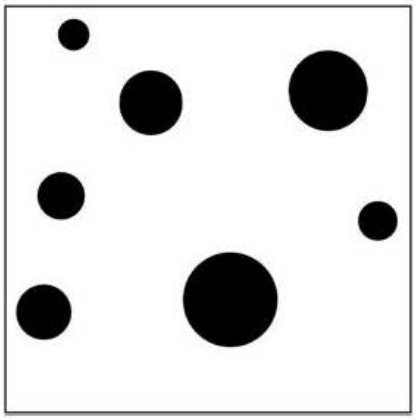
Which of these do you prefer?

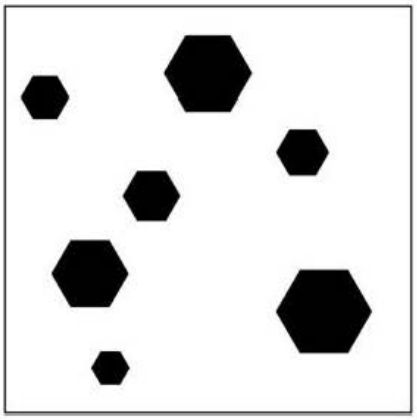




Phone Shape3

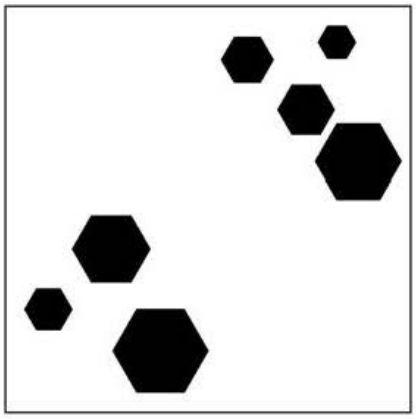
Which of these do you prefer?

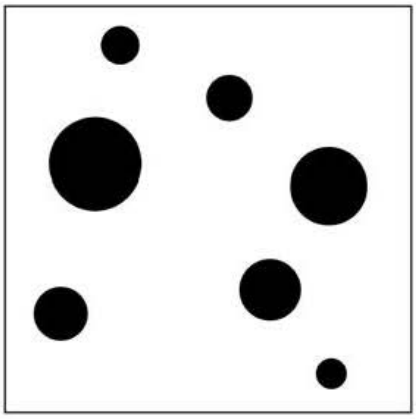




Phone Shape4

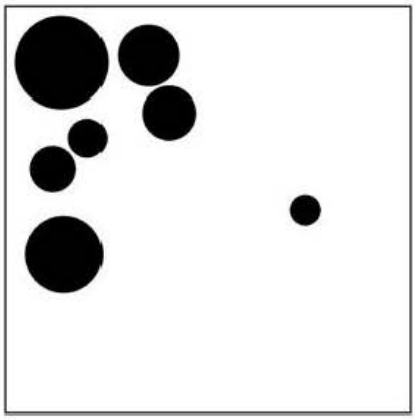
Which of these do you prefer?

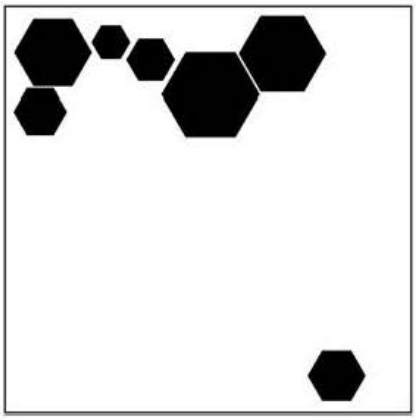




Phone Shape5

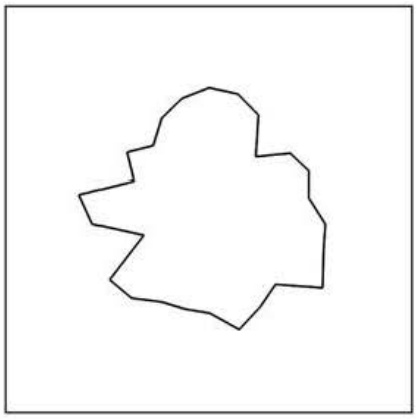
Which of these do you prefer?

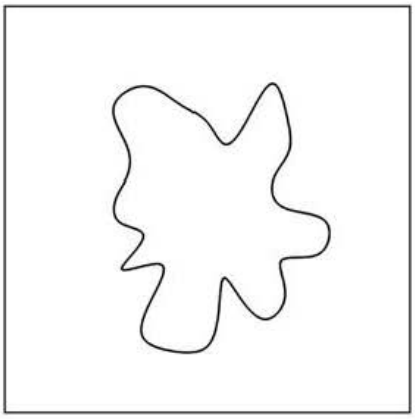




Phone Shape6

Which of these do you prefer?





Phone Angular vs. Curve Type Intro

This section of the questionnaire asks you to choose between two fonts or typefaces. There are no right or wrong answers, we are only interested in which you prefer.

For each pair, please click on which you like best in general.

Go with your first instinct in selecting an image rather than putting a lot of thought into your choice.

If needed, zoom in on the images so that they will get larger.

Phone Type1

Which of these do you prefer?

Phone Type2

Which of these do you prefer?

Phone Type3

Which of these do you prefer?

Phone Type4

Which of these do you prefer?

Phone Type5

Which of these do you prefer?

Phone Type6

Which of these do you prefer?

CVPA

Thank you.

We will now ask some general questions that deal with the look of things and what you think about when you are considering a product.

Please indicate your agreement, from "Strongly disagree" to "Strongly agree", with each statement below.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
If you are paying attention please select "Somewhat agree".	O	O	O	O	O
Beautiful product designs make our world a better place to live.	O	O	O	O	O
Owning products that have superior designs makes me feel good about myself.	O	O	O	O	O
A product's design is a source of pleasure for me.	O	O	O	O	O

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I enjoy seeing displays of products that have superior designs.	O	O	O	O	O
Sometimes the way a product looks seems to reach out and grab me.	O	O	O	O	O

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
If a product's design really "speaks" to me, I feel that I must buy it.	○	○	○	○	○
I have the ability to imagine how a product will fit in with designs of other things I already own.	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
When I see a product that has a really great design, I feel a strong urge to buy it.	○	○	○	○	○
Being able to see subtle differences in product designs is one skill that I have developed over time.	○	○	○	○	○
I see things in a product's design that other people tend to pass over.	○	○	○	○	○
I have a pretty good idea of what makes one product look better than its competitors.	○	○	○	○	○

50-item IPIP-NEO

Now, we will present a series of statements that might or might not describe you.

Please indicate how well each statement describes what you are like, what you think, or how you feel, as you generally are now (not as you wish to be in the future).

So that you can rate how much each statement describes you in the most honest manner, your responses will be kept in absolute confidence.

Please press the arrow to continue.

Indicate for each statement whether it is Very Inaccurate, Moderately Inaccurate, Neither Accurate Nor Inaccurate, Moderately Accurate, or Very Accurate as a description of you.

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Am skilled in handling social situations.	○	○	○	○	○
Am the life of the party.	○	○	○	○	○
Feel comfortable around people.	○	○	○	○	○
Make friends easily.	○	○	○	○	○
Am often down in the dumps.	○	○	○	○	○
Am very pleased with myself.	○	○	○	○	○
Dislike myself.	○	○	○	○	○
Seldom feel blue.	○	○	○	○	○
Feel comfortable with myself.	○	○	○	○	○
Often feel blue.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Am not easily bothered by things.	○	○	○	○	○
Have frequent mood swings.	○	○	○	○	○
Rarely get irritated.	○	○	○	○	○
Panic easily.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Select "Very accurate" to show that you are paying attention.	○	○	○	○	○
Don't talk a lot.	○	○	○	○	○
Keep in the background.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Don't like to draw attention to myself.	○	○	○	○	○
Know how to captivate people.	○	○	○	○	○
Have little to say.	○	○	○	○	○
Would describe my experiences as somewhat dull.	○	○	○	○	○
Tend to vote for liberal political candidates.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Enjoy hearing new ideas.	○	○	○	○	○
Believe in the importance of art.	○	○	○	○	○
Have a vivid imagination.	○	○	○	○	○
Carry the conversation to a higher level.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Avoid philosophical discussions.	○	○	○	○	○
Do not like art.	○	○	○	○	○
Do not enjoy going to art museums.	○	○	○	○	○
Am not interested in abstract ideas.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Tend to vote for conservative political candidates.	○	○	○	○	○
Have a sharp tongue.	○	○	○	○	○
Make people feel at ease.	○	○	○	○	○
Have a good word for everyone.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Respect others.	○	○	○	○	○
Believe that others have good intentions.	○	○	○	○	○
Accept people as they are.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Suspect hidden motives in others.	○	○	○	○	○
Get back at others.	○	○	○	○	○
Cut others to pieces.	○	○	○	○	○
Insult people.	○	○	○	○	○
Waste my time.	○	○	○	○	○
Pay attention to details.	○	○	○	○	○
Shirk my duties.	○	○	○	○	○
Carry out my plans.	○	○	○	○	○
Don't see things through.	○	○	○	○	○
Find it difficult to get down to work.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Do just enough work to get by.	○	○	○	○	○
Am always prepared.	○	○	○	○	○
Make plans and stick to them.	○	○	○	○	○
Get chores done right away.	○	○	○	○	○

Political Orientation

Thank you. We will now continue with statements that might or might not describe you.

Please indicate whether you Strongly disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, or Strongly agree with each statement below as a description of you.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Believe laws should be strictly enforced.	○	○	○	○	○
Believe that too much tax money goes to support artists.	○	○	○	○	○
Tend to vote for liberal political candidates.	○	○	○	○	○
Tend to vote for conservative political candidates.	○	○	○	○	○
Believe that we should be tough on crime.	○	○	○	○	○

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |

Believe that we coddle criminals too much.	○	○	○	○	○
Believe in one true religion.	○	○	○	○	○
Believe that there is no absolute right or wrong.	○	○	○	○	○

	Very inaccurate	Moderately inaccurate	Neither accurate nor inaccurate	Moderately accurate	Very accurate
Do just enough work to get by.	○	○	○	○	○
Am always prepared.	○	○	○	○	○
Make plans and stick to them.	○	○	○	○	○
Get chores done right away.	○	○	○	○	○

Political Orientation

Thank you. We will now continue with statements that might or might not describe you.

Please indicate whether you Strongly disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, or Strongly agree with each statement below as a description of you.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Believe laws should be strictly enforced.	○	○	○	○	○
Believe that too much tax money goes to support artists.	○	○	○	○	○
Tend to vote for liberal political candidates.	○	○	○	○	○
Tend to vote for conservative political candidates.	○	○	○	○	○
Believe that we should be tough on crime.	○	○	○	○	○

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |

Believe that we coddle criminals too much.	○	○	○	○	○
Believe in one true religion.	○	○	○	○	○
Believe that there is no absolute right or wrong.	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Believe that criminals should receive help rather than punishment.	○	○	○	○	○
Like to stand during the national anthem.	○	○	○	○	○

Please indicate your preference from "Do not prefer" to "Prefer a great deal", for each of the two primary American political parties.

	Do not prefer	Prefer slightly	Prefer a moderate amount	Prefer a lot	Prefer a great deal
Democratic Party	○	○	○	○	○
Republican Party	○	○	○	○	○

Overall, where would you place yourself, on the following scale of liberalism-conservatism in terms of social and cultural issues (for example, on abortion, separation of church and state, and affirmative action)?

Very Liberal	Liberal	Somewhat Liberal	Moderate	Somewhat Conservative	Conservative	Very Conservative
○	○	○	○	○	○	○

Overall, where would you place yourself, on the following scale of liberalism-conservatism in terms of economic issues (for example, on taxation, welfare, privatization of social security)?

Very Liberal	Liberal	Somewhat Liberal	Moderate	Somewhat Conservative	Conservative	Very Conservative
○	○	○	○	○	○	○

Overall, where would you place yourself, on the following scale of liberalism-conservatism in terms of law and order issues (for example, immigration, police use of force, drug use sentencing)?

Very Liberal	Liberal	Somewhat Liberal	Moderate	Somewhat Conservative	Conservative	Very Conservative
○	○	○	○	○	○	○

Demographics and General Questions

This is the last set of questions.

Please answer the following questions to let us know a little about your background.

What is your age? (Please enter your age in years below)

Are you still paying attention? If so, please select 2016 from the list below.

- ○ 2020
- ○ 2018
- ○ 2016

What is the highest level of education you have achieved? (If you are currently in school, please indicate the year you're in now.)

- ○ 8th grade or under
- ○ High school graduate or GED
- ○ Some college or technical/vocational school
- ○ College graduate or technical/vocational graduate
- ○ Completed or have taken some post-baccalaurate or graduate school

If you had to choose, which of the following categories best represents your ancestry or heritage? Choose all that apply.

- ☐ Native Hawaiian or Pacific Islander
- ☐ Hispanic/Latinx
- ☐ Black or African American
- ☐ White or European American
- ☐ Asian
- ☐ American Indian or Alaska Native
- ☐ Prefer not to answer

With which of the following do you most identify?

- Man
- Woman
- Trans
- Gender fluid
- Not listed
- Prefer not to answer

Which range best represents your total yearly household income?

If you are still dependent on your parents, please answer with your parents' household income. If you are independent of your parents, please answer with your personal yearly income.

- $0 - $19,999
- $20,000 - $39,999
- $40,000 - $59,999
- $60,000 - $79,999
- $80,000 - $99,999
- $100,000 or more
- Don't know
- Prefer not to answer

Exit Questions

Thank you for completing this survey. Your completion code is coming up shortly.

But first, did you have any issues in completing this survey? If so, please describe.

Thank you for participating in this study.

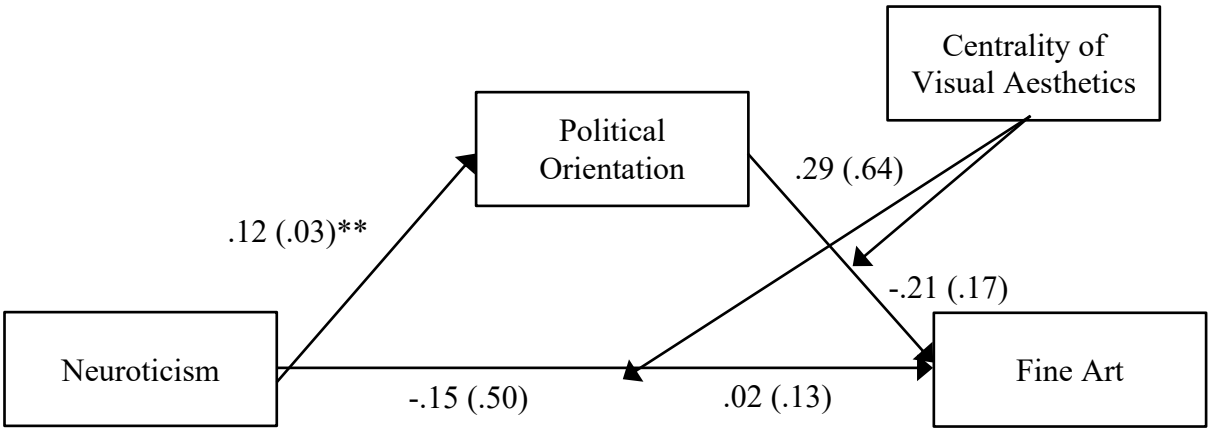
The purpose of this research study is to collect data about different types of people, their individual differences (ex. personality traits, gender, age, political affiliation, education) and their preferences for fine art and graphic design. We will be looking for potential connections between each of these factors for the purposes of understanding differences in visual taste.

Contact for Questions:
If you have any questions before, during, or after the study, you may contact the principal investigator, Shannon Zenner at szenner@live.unc.edu. If you have questions or concerns, or if you would like to obtain information or offer input, please contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Your MTurk survey completion code is:
7546

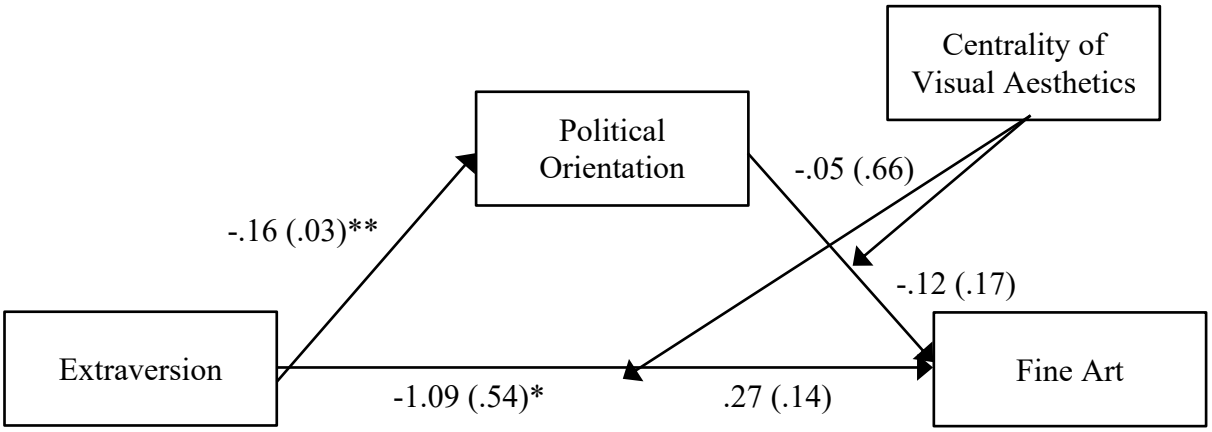
Powered by Qualtrics

APPENDIX B: ADDITIONAL ANALYSIS



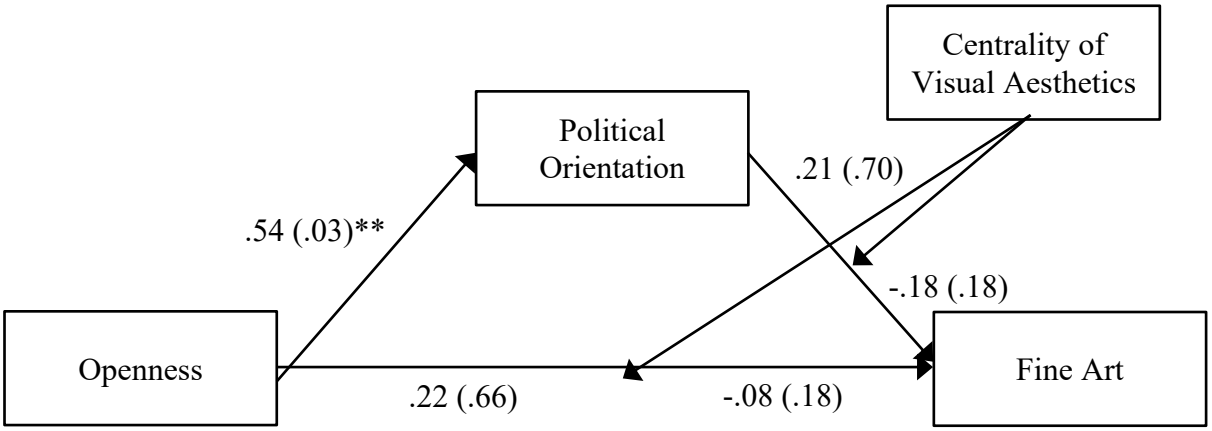
Index of Moderated Mediation B = -.03, SE = .02, CI_{95} = -.07 to .01.

Figure 23. Model of relationship between neuroticism, political orientation, and the abstract/representative dimension represented with fine art*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



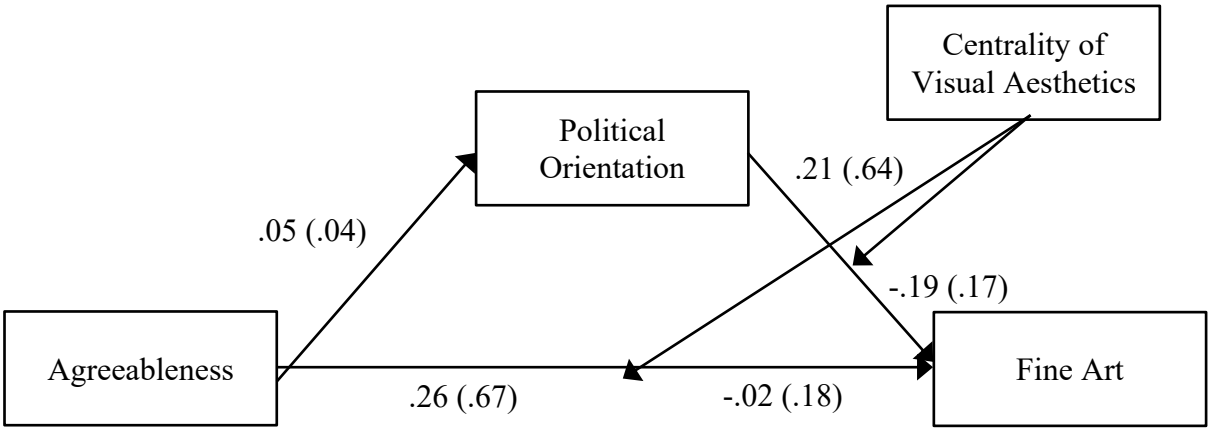
Index of Moderated Mediation B = .02, SE = .03, CI_{95} = -.03 to .07.

Figure 24. Model of relationship between extraversion, political orientation, and the abstract/representative dimension represented with fine art*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



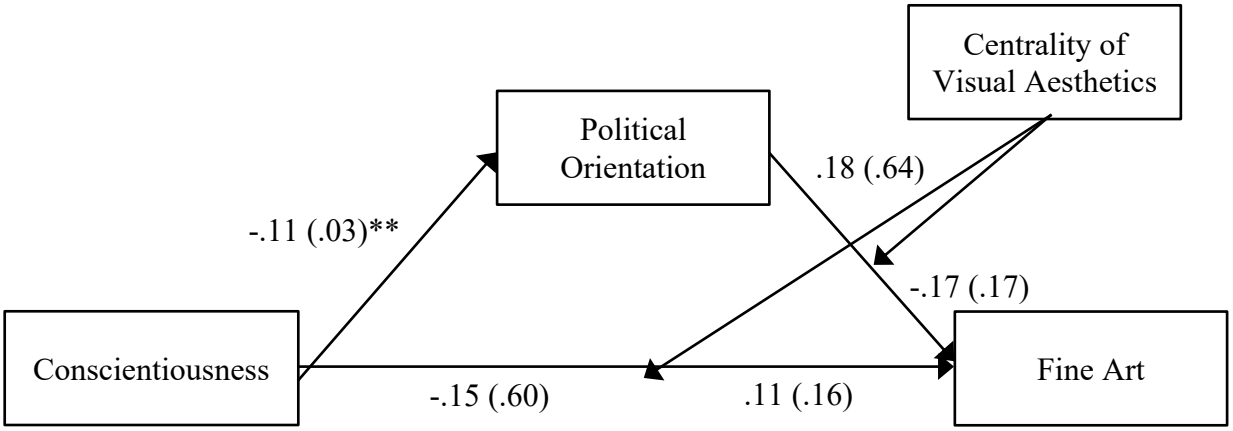
Index of Moderated Mediation B = -.10, SE = .10, CI_{95} = -.29 to .09.

Figure 25. Model of relationship between openness, political orientation, and the abstract/representative dimension represented with fine art*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



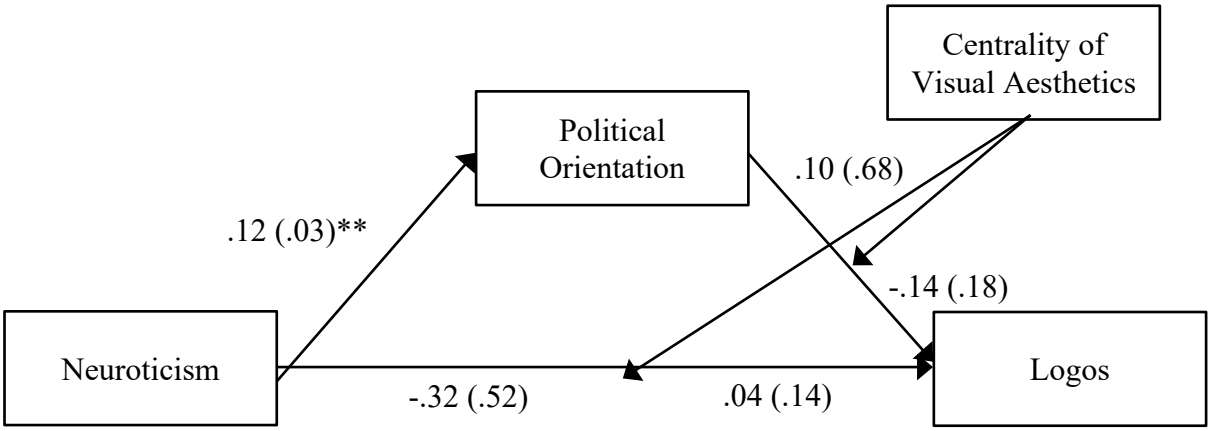
Index of Moderated Mediation B = -.01, SE = .01, CI_{95} = -.04 to .01.

Figure 26. Model of relationship between agreeableness, political orientation, and the abstract/representative dimension represented with fine art*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



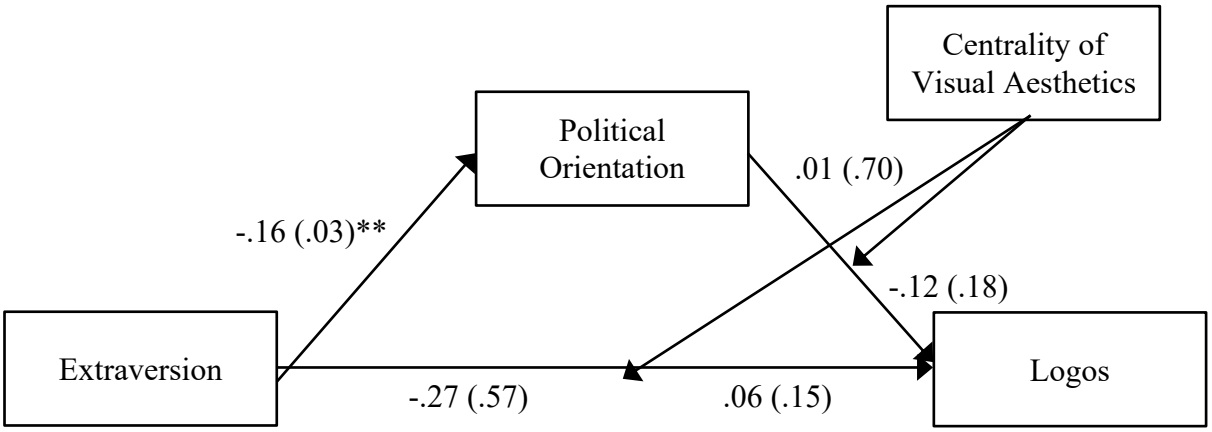
Index of Moderated Mediation B = .02, SE = .02, CI_{95} = -.02 to .06.

Figure 27. Model of relationship between conscientiousness, political orientation, and the abstract/representative dimension represented with fine art*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



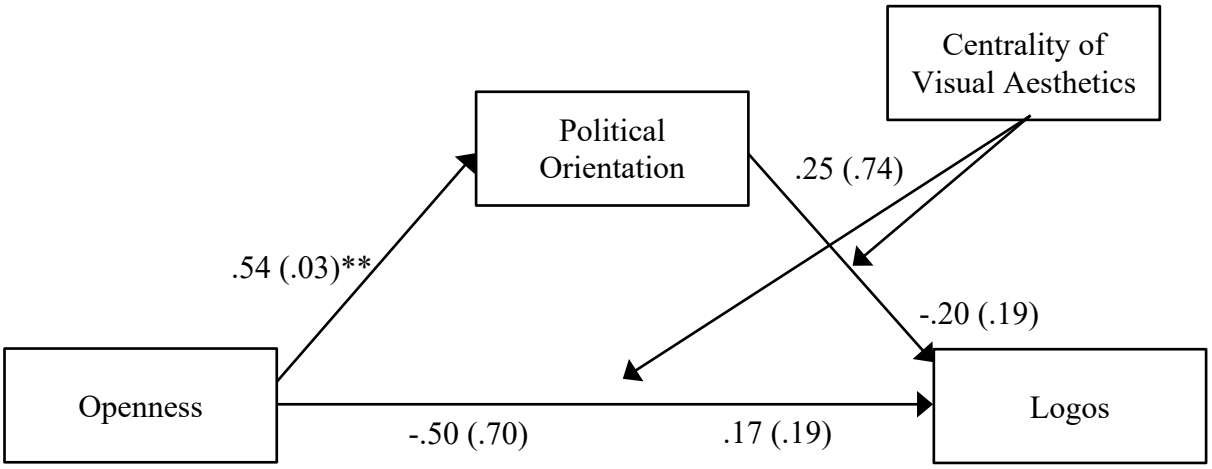
Index of Moderated Mediation B = -.02, SE = .02, CI_{95} = -.06 to .03.

Figure 28. Model of relationship between neuroticism, political orientation, and the abstract/representative dimension represented with logos*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



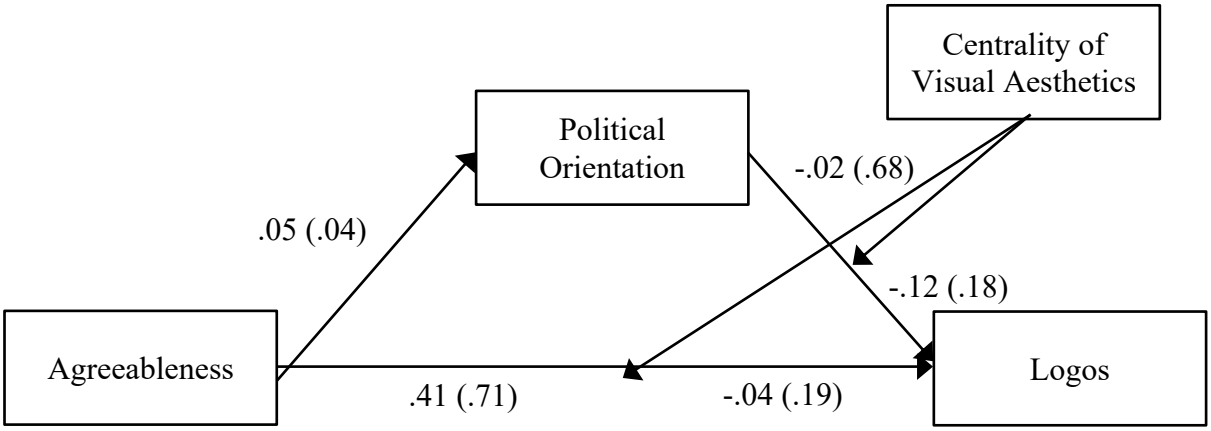
Index of Moderated Mediation B = .02, SE = .03, CI_{95} = -.03 to .08.

Figure 29. Model of relationship between extraversion, political orientation, and the abstract/representative dimension represented with logos*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



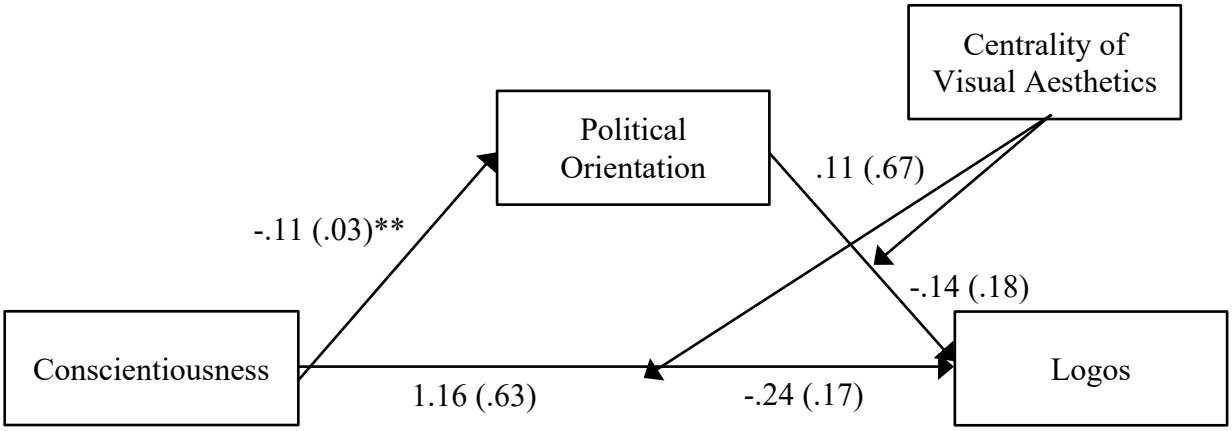
Index of Moderated Mediation B = -.11, SE = .11, CI_{95} = -.31 to .11.

Figure 30. Model of relationship between openness, political orientation, and the abstract/representative dimension represented with logos*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



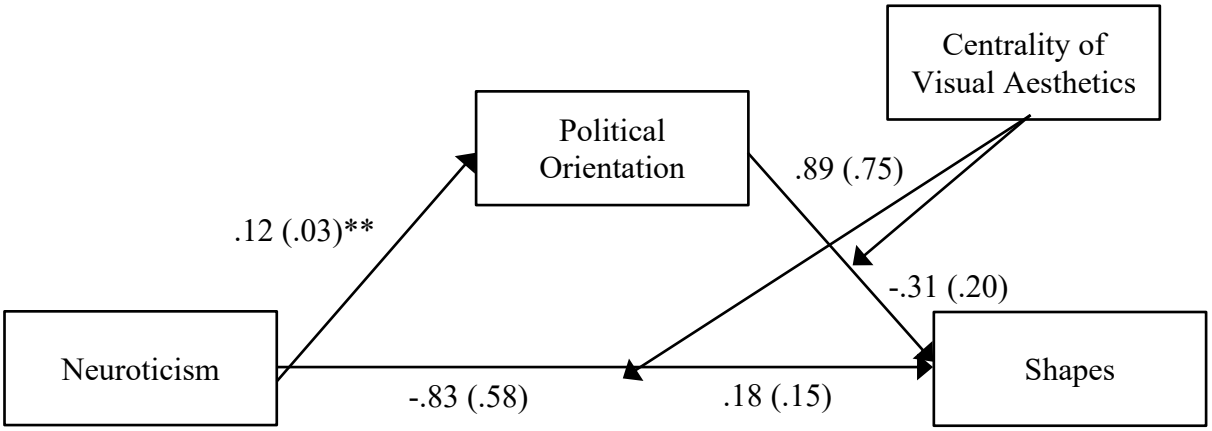
Index of Moderated Mediation B = -.01, SE = .01, CI_{95} = -.04 to .02.

Figure 31. Model of relationship between agreeableness, political orientation, and the abstract/representative dimension represented with logos*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



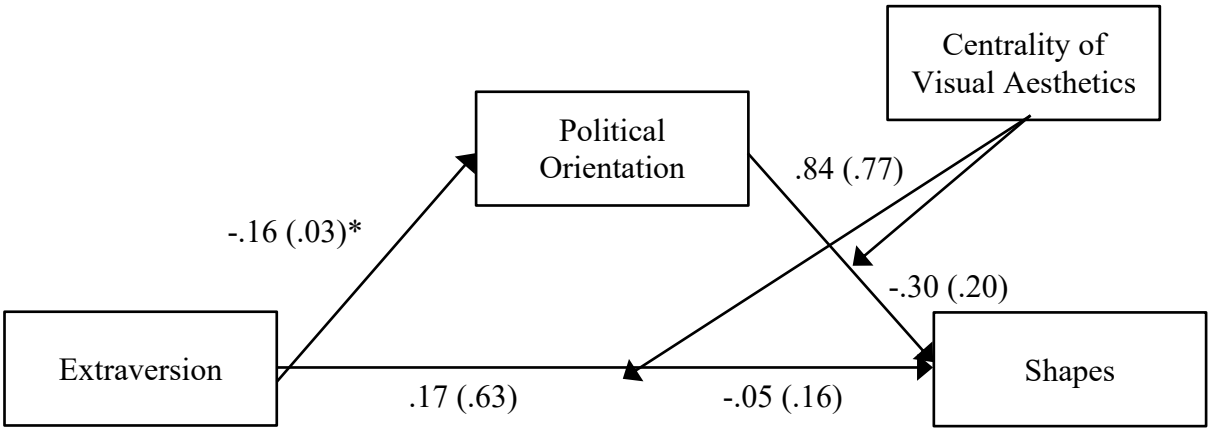
Index of Moderated Mediation B = .02, SE = .02, CI_{95} = -.02 to .06.

Figure 32. Model of relationship between conscientiousness, political orientation, and the abstract/representative dimension represented with logos*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



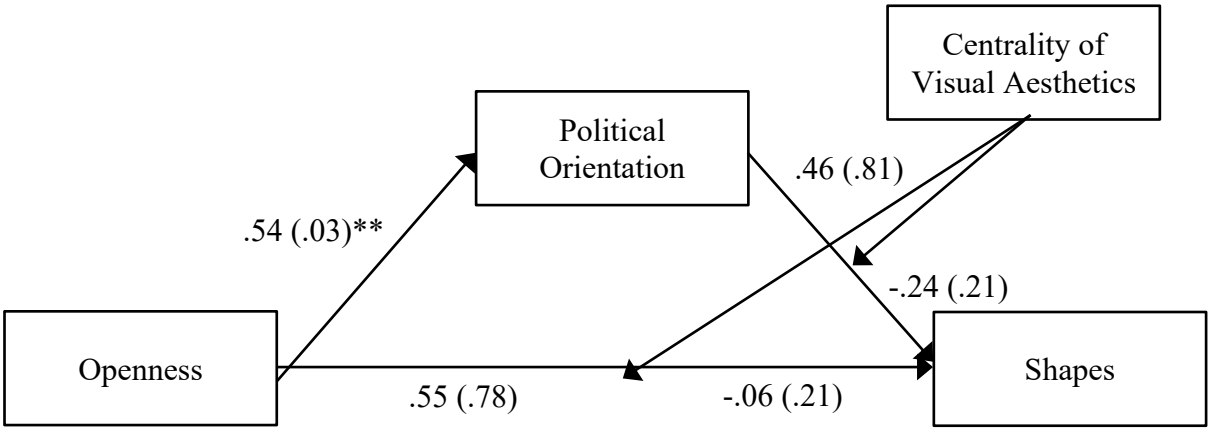
Index of Moderated Mediation B = -.04, SE = .03, CI_{95} = -.11 to .01.

Figure 33. Model of relationship between neuroticism, political orientation, and the angular/curved dimension represented with shapes*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



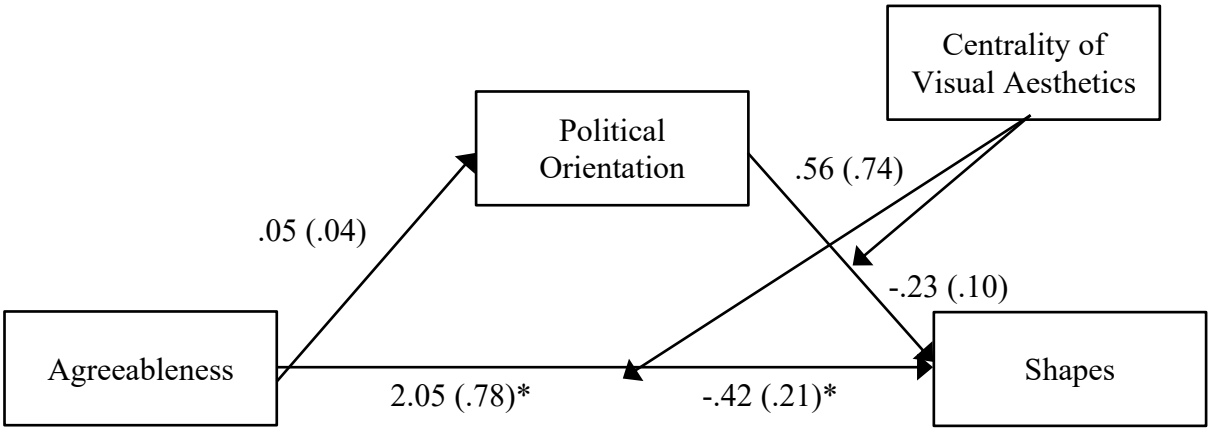
Index of Moderated Mediation B = -.05, SE = .04, CI_{95} = -.02 to .13.

Figure 34. Model of relationship between extraversion, political orientation, and the angular/curved dimension represented with shapes*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



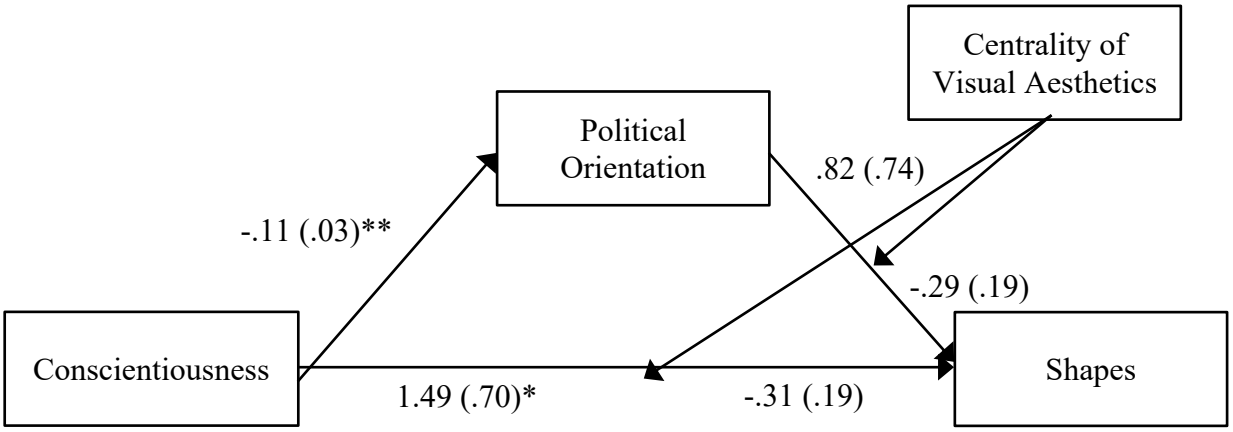
Index of Moderated Mediation B = -.13, SE = .12, CI_{95} = -.37 to .10.

Figure 35. Model of relationship between openness, political orientation, and the angular/curved dimension represented with shapes*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



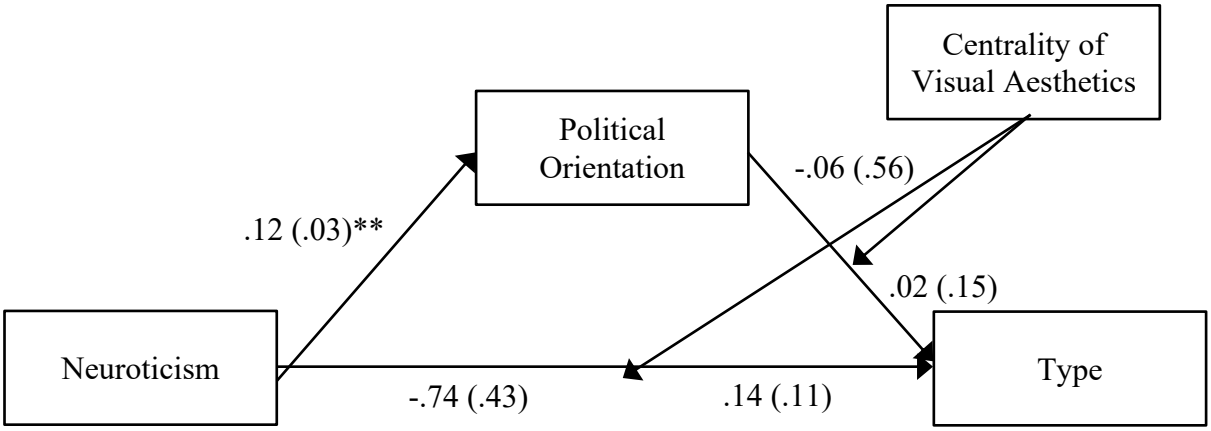
Index of Moderated Mediation B = -.01, SE = .02, CI_{95} = -.06 to .01.

Figure 36. Model of relationship between agreeableness, political orientation, and the angular/curved dimension represented with shapes*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



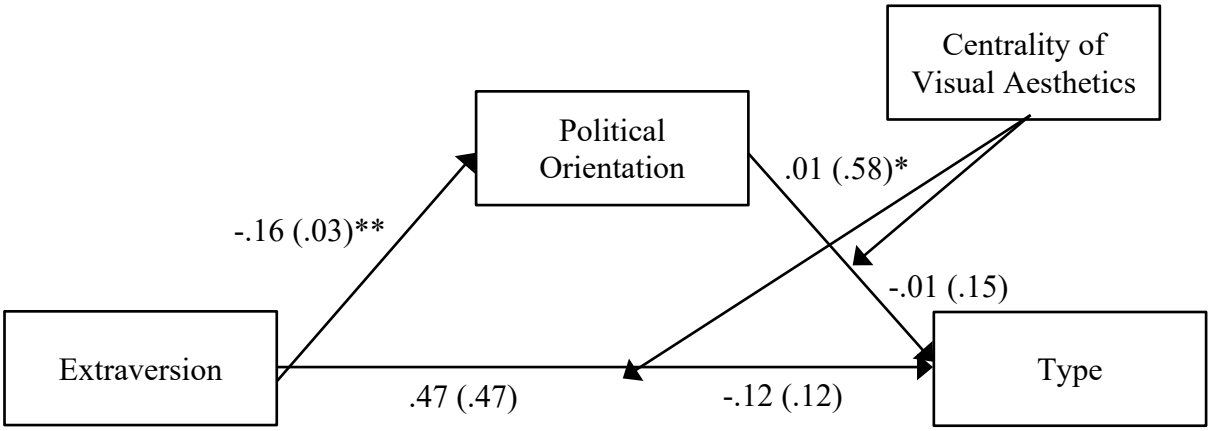
1. Index of Moderated Mediation B = .03, SE = .03, CI_{95} = -.01 to .09.

Figure 37. Model of relationship between conscientiousness, political orientation, and the angular/curved dimension represented with shapes*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



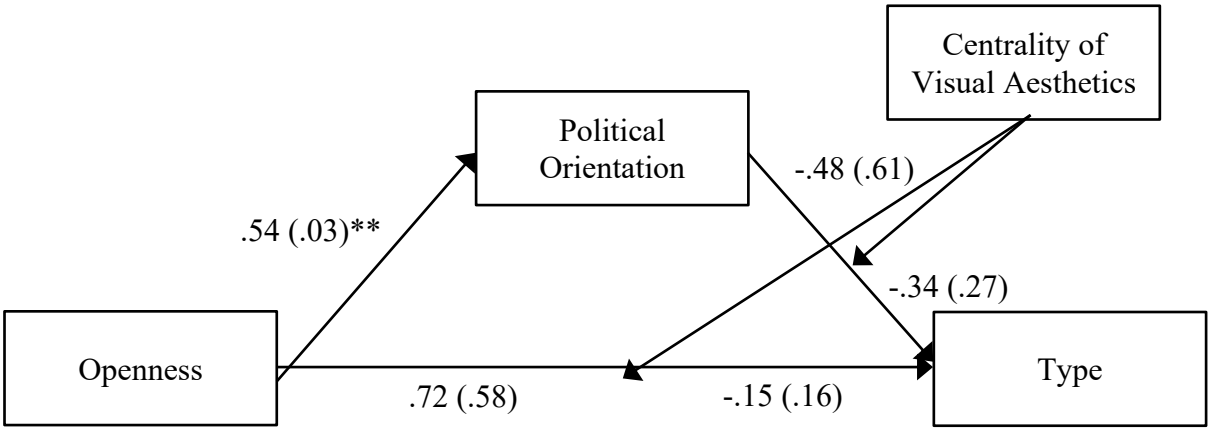
Index of Moderated Mediation B = .002, SE = .02, CI_{95} = -.04 to .04.

Figure 37. Model of relationship between neuroticism, political orientation, and the angular/curved dimension represented with type*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



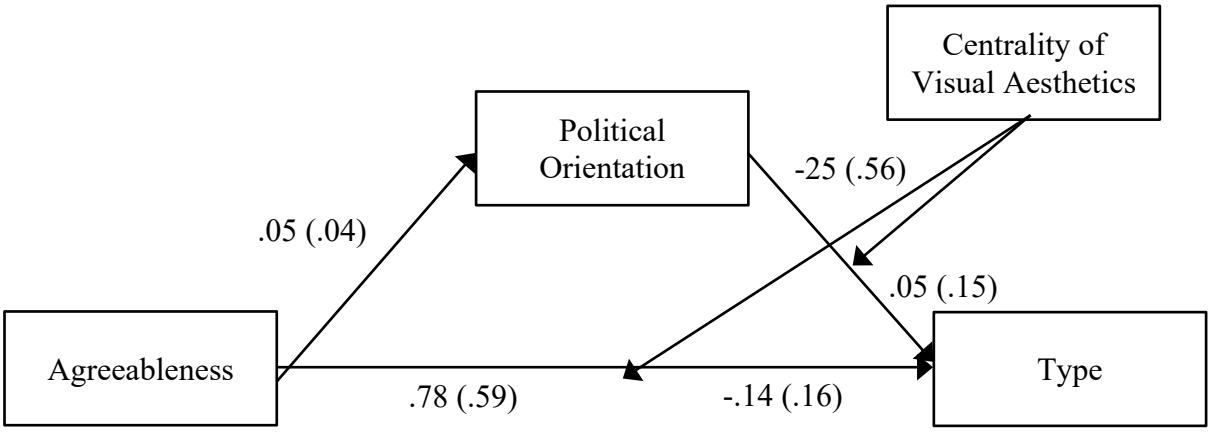
Index of Moderated Mediation B = .001, SE = .02, CI_{95} = -.05 to .05.

Figure 38. Model of relationship between extraversion, political orientation, and the angular/curved dimension represented with type*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



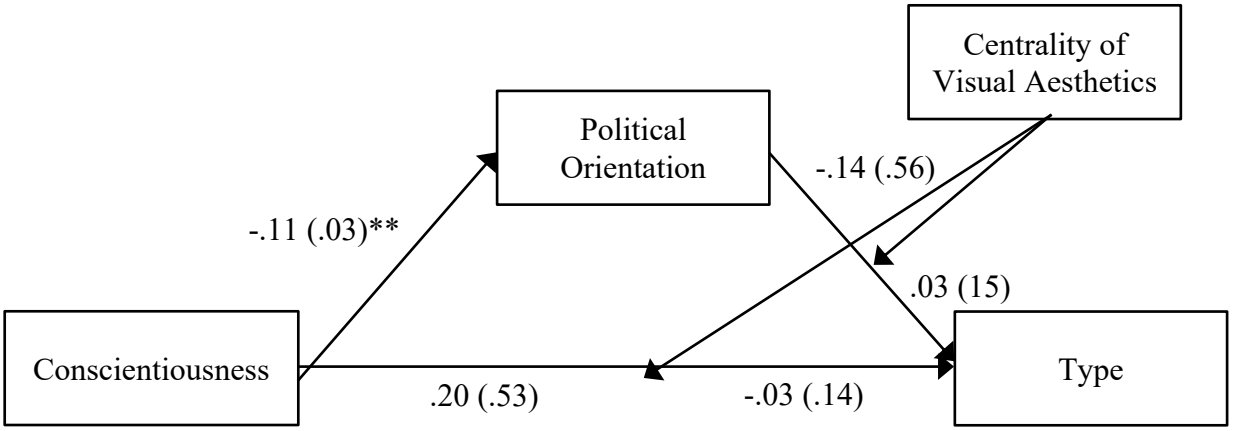
Index of Moderated Mediation B = .05, SE = .08, CI_{95} = -.10 to .20.

Figure 39. Model of relationship between openness, political orientation, and the angular/curved dimension represented with type*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



Index of Moderated Mediation B = .003, SE = .01, CI_{95} = -.02 to .03.

Figure 40. Model of relationship between agreeableness, political orientation, and the angular/curved dimension represented with type*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*



Index of Moderated Mediation B = -.003, SE = .02, CI_{95} = -.04 to .03.

Figure 41. Model of relationship between conscientiousness, political orientation, and the angular/curved dimension represented with type*, as moderated by a person's centrality of visual aesthetics (a proxy for visual expertise). *p < .05; **p < .001*